

MARCH, 1882.

AMERICAN

AGRICULTURIST

FOR THE FARM, GARDEN & HOUSEHOLD



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Number 3.

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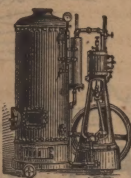
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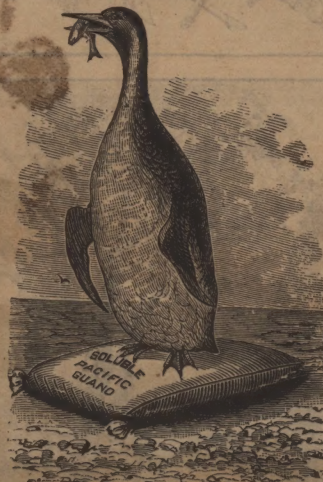
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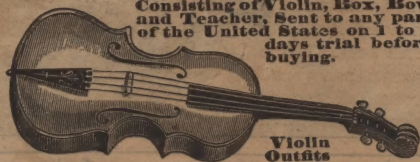
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AMERICAN AGRICULTURIST

For the Farm, Garden, and Household.

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VOLUME XLI.—No. 3.

NEW YORK, MARCH, 1882.

NEW SERIES—No. 422.



"WHAT MIGHT HAVE BEEN."

The farmer had set the trap for a fox, but the hungry hawk first espied the bait and fell a victim in its place. Perhaps the gain to the farmer is quite as great as if the fox had been caught, for the boldness of the hawk makes him dangerous to the farmer's poultry. The fox on the other hand is exceedingly wary; it accomplishes its ends by caution and cunning, and is often repelled by the appearance of danger. The artist has shown this peculiarity of the fox in the expression

given the animal in the engraving. The hawk is fast, but Reynard is in great doubt, if it be not a bait intended for him. His well-known slyness and caution are evinced in his countenance. In the older States, the bounties, joined to the fact that every farmer's boy looks upon the fox as an enemy, have well nigh exterminated this animal. It is only when pressed by hunger that a hawk can be caught by a trap placed upon the ground. The bird will soar over the barn-yard for the pur-

pose of observation; but if there is a dead tree near by which affords a good view, it will alight there. Taking advantage of this peculiarity, poultry keepers erect poles twenty or thirty feet high, and upon the very tops of these, place small steel traps, set and fastened to the pole by the chain, but without any bait. The hawk, seeing a favorite point for observation, and not having its suspicions aroused by bait, readily alights upon the trap and is caught.

Contents of this Number.

[Articles marked with a star (*) are illustrated; the figure with the star indicates the number of illustrations.]

Agricultural Association, American.....	101
Apples, Lady.....	100
Apples, Maggots in.....	127
Barn, A Grain and Stock.....	4* 106
Bee Notes for March.....	93
Boats in Wet Weather.....	127
Books, Some New Rural.....	98
Boxes, Feed.....	5* 108
BOYS AND GIRLS' COLUMNS:— <i>The Doctor's Talks</i> .— What is Wind?—The Air in Motion—Anemometers or Wind Measurers—Another Boy; His Sad Fate— The Death of Aunt Sue—Paper Ornaments—Puzzle Box—The Dog and the Crane—How to Amuse Your Young Friends—A Candy Pull.....	6* 116-118
Catalogues Received.....	126
Cattle, Guernsey—"Gypsy Boy of Woodlawn".....	* 103
Chicks, Early Spring.....	105
Cold Frames.....	109
College, The Agricultural of Ohio.....	100
College, The Indiana Agricultural.....	100
Coins—Weighing Money.....	100
Conifers, Manual of the.....	127
Corn Bread Recipes.....	101
Corn, Changing His.....	100
Corn Marker.....	* 101
Cut Worms and Other Insects in Georgia.....	110
Disease, A New, Among Dairy Stock.....	102
Duck, The Mallard.....	108
Ensilage "Congress".....	99
Fairs for 1882.....	127
Farmers' Club.....	127
Farm Homes, Western.....	101
Fertilizers, A Farmer's Experiments with.....	94
Fodder Rations and Feeding Values.....	106
Garden Marker.....	* 101
Garden, The Albert Workingmen's.....	* 111
Gates with Wooden Hinges.....	3* 109
Grass, Kentucky Blue.....	101
Grass, The Hungarian.....	95
Hæmorrhoids in Cattle.....	100
Hops, Raising.....	127
Horse, An Uneasy.....	127
Horses and Dahlias.....	127
Horses, Millet for.....	127
Hot-Beds—Boxes, A Farmer's.....	95
Hot-Beds with Fire Heat.....	100
HOUSEHOLD:—A Spoon Case, Overwork Among Women. Making the Table Attractive. Household Notes and Queries. The Disposal of House Slop. A Home-Made Desk. Cottage Cheese.....	4* 114-115
House, Pioneer's, Costing \$250 to \$500.....	5* 96
House Plans, 183 Prize Plans.....	95
Humbugs, Sundry.....	98
Indiana Wheat and Corn Crops.....	100
Kansas Products in 1881.....	100
Ladder, Bracing a.....	105
Lamps, The Care of the.....	98
Land, How Much For Each.....	103
Letters, Careless, and Lost Ones.....	101
Lime and Limestone.....	105
Maggot, Remedy For Cabbage.....	112
Milk, Experiments with.....	104
New Jersey.....	106
Notes on Orchard and Garden.....	92-93
Oil Cake and Linseed Meal.....	95
Onions, A Dish.....	97
Onions, Raising a Crop of.....	113
Orange Culture, Profits of.....	127
Oregon—Washington Territory.....	99
"Pasture," A Chicken.....	102
Pea, the "American Wonder".....	113
Peaches and Pears.....	126
Peaches, The Profit from Thinning.....	113
Perlimmon Trees, Large.....	100
Petroleum, Crude.....	100
Phlox, Drummond's and Its Varieties.....	* 111
Plants, Watering House.....	106
Potato Bug Swindle.....	100
"Prairie Rice," Egyptian Corn, etc.....	127
Roller, A Barrel.....	* 105
"Sagging Bar" For a Gate.....	* 107
Screw-Driver, An Improved.....	* 102
Seeds, A Large Sale of.....	102
Shears, Perfection Pruning.....	* 112
Silk Worms and Their Food.....	107
South America, Matters in.....	127
States, Area and Relative Size of.....	101
Strawberry Plants, Distance to Set.....	100
Strawberry Season.....	100
Strawberries in Minnesota.....	127
Sunflower Culture.....	127
Sunflower, The Globe.....	* 111
Suggestions of the Season.....	92
Teosinte, The, in Louisiana.....	108
Tie, Another Cattle.....	* 104
Tim Bunker on Points in Deacon Smith's Farming.....	108
Tomato, The Best.....	126
Trees Injured by Vines.....	* 112
Turkeys, Live and Dead, Weight of.....	102
Varieties, What Shall I Plant?.....	100
White Grub in Illinois.....	100
Willows, Some Uses of.....	* 110

AMERICAN AGRICULTURIST.

NEW YORK, MARCH, 1882.

Suggestions for the Season.

March is the first spring month, and by this time all the plans for the season's work should be well matured. The farmer who plans little, often does but a small amount of the work that pays the best. He should be fully aware of the importance of being ready for work when the time comes. In some parts of the country there is a homely phrase, "Getting a good ready." It is not scholarly, but very expressive. It really means making thorough preparation, and in doing this there will be men to hire, seeds to provide, implements to buy, and a general overhauling and putting in readiness of all the machinery of the farm. The matter of hired help is an important one, and requires much thought. There is a great difference in hired men; they range all the way from the thoughtful, conscientious man who is as much interested in the success of the farm as if it was his own, to the shiftless, indifferent, and sometimes bad man, who cares for nothing but his pay, and is not fit to have a place on any farm, especially if there are children in the farmer's household. This is a more important matter than many suppose. Aside from the danger to the morals of young people from improper language and acts, a man who is not kind to them has no business on a place where there are children. One of the best workmen we ever knew utterly ignored the children, taking no more notice of them than if they were so many stones. We are not aware that he was ever unkind to them, but the little things soon became afraid to go near him, and would run away whenever he approached. We would not have such a man on the farm. Some men are dear at any price, while others are worth much more than the wages that they are paid. Between these two extremes is the great mass of farm laborers, and it requires more than a passing glance to engage the best men. The farmer who will be particular enough to have only good men about him, will also know that they must be treated as men, and from them he will receive, in return, the thoughtful services of men, instead of the bare labor of their hands.

Several things are to be taken into account in the purchase of the more expensive farm machines, and they are so much of a personal nature that it is impossible for us to answer such questions as to which is the best reaper, or plow, or hay-rake, or harrow, etc.? as many of the reapers and mowers and other farm implements are so near perfection that the buyer cannot go amiss in choosing any one of a dozen of the most prominent. The character of the soil, whether clayey or sandy, level or hilly, will, for example, help to decide which of the various plows is the best. Other things being equal, it is better to buy those farm implements that are made nearest home, on account of the greater readiness with which any needed repairs may be made. There are many implements used upon the farm that an ingenious farmer, one handy with tools, can make for himself during stormy days, and at other odd times. If a corn-marker will be needed, now is the time to make it, and not wait until the field is ready to plant, and be obliged to delay a day in getting a marker. In the same way the shovels, forks, whiffletrees, etc., may be provided in advance of their time of use. A great deal of this work of getting ready should be done in advance, so that when the busy weeks of farm work come, they may be made the most of. Some errors are committed by beginning the regular spring work too soon, in which "the more haste is the worst speed." Much work that is done too soon must be done over again.

In the Notes through the winter months it has been our endeavor to impress upon cultivators the importance of giving proper thought to their work. During the busy season soon to open, the atten-

tion to head work will here give place to hints and suggestions that apply to the labor of the hand. By this we do not mean that less thought is now required, but it is not so much a planning for the future as execution of the work on hand that now demands our attention. Winter is the season of peace, in which every farmer should prepare for the war of the summer. The campaign opens this month, and until October we shall be in the field, working out the plans that have been made. Up early and late, the fight for the victory of a great crop in 1882 will go on, and the farmer will not be the only one to rejoice in labors well rewarded. The tiller of the soil can never be too deeply impressed with the importance of his calling, for upon it rests, as upon no other, the prosperity of the nation, and the happiness of each one of our millions of homes.

The Live Stock.

The lack of proper care during the winter leaves the farm stock in poor condition in the spring. Any such animal should be well cared for now. A mess of warm bran-slop daily—a little ginger sometimes stirred in—will be useful for a cow. If calves are infested with vermin they should be freed from these pests at once. A mixture of sulphur and lard, rubbed along the spine and on the brisket, is effective. A tablespoonful of sulphur and molasses, taken internally once a day, will help to drive away the lice; it will also prevent the disease known as "black-leg," frequently found among calves in early spring. Sheep that are suffering from an irritation of the skin and consequent loss of wool, should have a few doses of a mixture of equal parts of Cream of Tartar and Sulphur. Ewes with early lambs should have special favors shown them in the form of dry, warm pens, and rich food. The lambs need to be pushed forward at a rapid pace. A little fresh cow's milk may be given them while they are still quite young. Over feeding of young animals is, however, to be avoided.

The breeding sows should be separated from the others, and provided with dry and warm pens, bedded with cut straw or leaves, and furnished with a fender, or plank fastened to the wall eight inches above the floor, to prevent the young pigs from being crushed. As early chickens are the ones that pay the best, when practicable set all brooding hens, and take good care of all chicks hatched this month. The poultry house should be kept wholesome by frequent sprinklings of plaster or ashes. Kerosene may be applied to the perches if lice or fleas are present. Horses' feet will need attention at this season of the year, when the roads are in bad condition, and there is so much slush and wet everywhere.

Farm Work for the Month.

The surface water should be let off from the grain and other fields before the ground is entirely thawed. All drains require frequent inspection, especially at this time, when the outlets may be clogged by ice and snow. Clover seed may be sown this month. A very even cast can be obtained by sowing upon a light fall of snow on a still day.

There will be larger quantities of artificial fertilizers used this spring, and an application of those of the right kind will in many cases greatly benefit the crops receiving them. As a caution we would say, buy no fertilizer without knowing it to be as represented. These are special and expensive manures, and should be bought of responsible dealers (of whom there are several) and used understandingly.

Notes on Orchard and Garden Work.

We talk about "spring work." But, unfortunately, in this country, we have no spring, at least not the vernal season celebrated in English poetry and prose as the connecting link between winter and summer. If we must forego the vernal season, we can find our compensation in an autumn, the like of which is not known in the Old World. Our transition from winter to summer is usually marked by some days—it may be a week or

See Extraordinary Offers on Pages 124 and 125.

two—of the most uncertain and disagreeable weather of the year; then summer at once follows. It is on account of this sudden opening of the growing season that we so often advise the doing of everything that can be properly done, in the fall. Whether one's labor is in the orchard, the vineyard, the fruit garden, or the vegetable or flower garden, no matter how much he may have done the previous autumn, he will find that the work of our brief spring will come upon him suddenly, and that a host of things will crowd themselves upon his attention, and all demanding to be done at once. In the press of work at the opening of the season it is possible to do some things too soon. One is often tempted to put in the plow or spade too soon in preparing the land for early crops. This is a case in which one can follow the old injunction—"make haste slowly." If the soil does not crumble as it falls before the plow or from the spade, but is pasty and is left with a smooth surface, then wait. If the waiting seems too long, consider if drains will not help the matter next year. Another work that is often done too soon is tree planting. We advise the ordering of trees early, and the sooner they are received the better, but they need not be set out too early. In taking up the trees they lose a good share of their roots, and those roots that remain are not yet established and in working order, or, as the gardeners say, "have not got hold of the soil." Many forget that a tree is quite different from a post or a stake. If a young tree is planted and exposed to the drying winds of March, its buds and the bark are seriously affected; drying goes on, and the roots are not yet ready to supply the moisture needed to make up for this loss; hence many really good trees are actually dried to death or seriously injured, and the nurseryman is blamed. It is far better to heel-in the trees until the season of growth is at hand, even if the buds swell somewhat while they are in the trenches, than to subject them to "a struggle for existence" of this kind.

Orchard and Nursery.

In planting an orchard, the ground should be prepared by thorough plowing, manuring, etc., in much the same way as for the sowing of wheat or any other field crop. A profitable orchard requires that much care be taken in preparing the land for the trees. The list of trees to be planted should have been made out before this and sent to the nurserymen, to insure early attention and also the getting of the better sorts, the supply of which may not equal the demand. If the trees arrive before the time for planting, they may be kept with safety by heeling them in, that is, placing the roots in a trench and covering them temporarily with soil. Care should be taken that the labels do not get lost. It is well to separate the varieties and give a stake to each with the name written upon it. It must be remembered that many of the roots have been broken by the removal of the trees from the nursery soil, and the growing trees will have less capacity for absorbing nourishment for some time; therefore the evaporating surface of the top of the tree should be correspondingly diminished. There is no rule to guide in the cutting off of the branches, but it is always safe to cut away one-third of the shoots, and if the roots have been badly broken, more than this may be necessary. There are a number of methods of setting the trees; that which is styled the *Quincunx* is preferred by many orchardists. By this method each tree is in the center of a circle of six other trees. The method of laying out the *Quincunx* is given with illustrations in the Notes for March of last year. After the orchard is set, a map should be made on which the position of each tree with its variety is given. The trees in old orchards will need attention; some of them may have broken limbs which should be trimmed away. Girdled trees will need to be banked with earth, or grafts may be used to join the growing layer above the wound with that below. Pruning can be carried on until the sap starts, all large wounds should be covered with a wax made of three parts of beeswax, and rosin, and two parts of tallow

melted and thoroughly mixed together. The wax is to be applied in a melted state, and when it hardens a protecting coat is formed. Much good may be done to old orchards by removing the decaying scales of bark that cling to the trunks and larger limbs, at the same time destroying multitudes of the eggs and chrysalides of various insect pests. After the scraping, the trees may receive a washing of a thin, home-made soft soap. Grafting is one of those operations that every orchardist should be familiar with, but a detailed description of it requires so much space that it is not best for us to treat the subject fully each year. Those interested in grafting will find much of value in the Notes for April 1877. The nursery trees that were budded last summer will need attention. All above the bud must be removed that the young shoot may have the whole nourishment supplied by the roots. Cut away the old stock not closer than one-half inch from the new branch.

The Fruit Garden.

We trust that many fruit gardens will be started this spring. Select a warm piece of ground conveniently near the house for gathering the fruits and protection from trespassers. The soil should be rich, deep, and mellow; in short, a fruit garden should have the best soil that can be found. A list of the best sorts of grapes, raspberries, blackberries, strawberries, currants, and gooseberries has been given in the Notes for last month, so that the selections might be made early, and the desired plants ordered in time to receive the best attention from the nurserymen. The planting is to be done so soon as the ground is settled. Blackberries and raspberries start very early, and it is best to set them in the fall, but very early in spring will do. The canes that grow this year will produce the fruit next season. Every farmer should grow all the grapes the family requires, and for this it is not necessary to have a large vineyard. A few vines well kept in some out-of-the-way place will bring large returns for care bestowed upon them. Grapes need a good soil and attention in pruning. If one has no grape vines we should advise him to get a few this spring, and then take care of them. Regarding the care of the vines we intend to give full information as the season progresses.

The Kitchen and Market Garden.

The cold frame plants, that is, those that were wintered in frames should go into the garden as soon as the soil is fit to work. The cabbage, cauliflower and lettuce are the three leading kinds of plants that are kept in frames, and planted out early. The plants may be hardened in the frames by taking off the sashes at all times during the present month, when the weather is not cold enough to chill the plants. In market gardens where a strict economy of the ground is of great importance, the lettuce is planted between the rows of cabbage or cauliflower. The ground should also be heavily manured—as high as 75 tons of fine stable manure per acre may be used—after which the land is marked out in rows about two feet apart, and the cabbage plants set 18 inches apart in the rows. The lettuce plants may be set one foot apart between these rows. The sowing in hot-beds and window-boxes needs to be done about six weeks before it is time for the young plants to go into the open ground. The *hardy* plants are the ones first to be considered in spring gardening, and all those the seeds of which can be sown "as early as the ground can be worked," come under this class. Of these are Beets, Carrots, Cabbages, Cress, Cauliflower, Celery, Lettuce, Parsley, Parsnip, Onion, Pea, Radish, Turnip, and Spinach. The *tender* sorts can not go into the ground with safety until the soil is well warmed, or to follow the old rule, not until "about corn-planting time," which is a safe guide in all parts of this country. Among the tender garden plants are: Beans, Cucumbers, Orka, Pumpkins, Squash, Tomato and Melons of both kinds. Some of these tender sorts may be started with great profit in the hot-bed or window, as for example the Tomato, but all frosts should be over before the plants are set in the garden.

New varieties of vegetables are offered every year, and there is a great temptation to the novice to use them largely. It is a mistake to rely upon them for the main crop, instead of the old and well tested sorts. It is well to experiment to some extent with the new kinds, but it should be with a view to pleasure rather than profit.

Everything should be in readiness for the coming busy weeks of spring; all the implements should have been put in good working order, and if necessary new ones bought. A good seed-sower will save more than its cost in a large garden the first year. The pea brush and bean poles can be best procured before the leaves start. The potato bug may be expected, and all should be prepared to meet this pest. The white butterfly is the parent of the cabbage "worm," and killing it is the shortest way to destroy this trouble in the garden.

The Flower Garden and Lawn.

A top-dressing of fine, well-rotted manure will do the old lawn much good. Care should be taken, that there be no weed seed in the fertilizer applied. Ashes, guano, fine bone meal and nitrate of soda, are all excellent for a lawn, and they bring on no seeds of troublesome weeds. New lawns should be made as early in the spring as possible, that the grass may get a good start and protect its own roots during the hot months of summer. Red-Top is best for light soils, and Kentucky Blue-Grass for those of a clayey nature; a little white clover may also be added. The seed should be sown liberally as a fine turf only comes from thick seeding. Not less than four bushels to the acre should be sown. If walks or drives are to be made, bear in mind that a walk that is cheap in the beginning is always unsatisfactory and dear in the end. Make sufficient excavation and use large stones at the bottom with smaller ones near the surface, to make a solid foundation. Some of the ornamental trees may be planted early; the evergreens may wait until later.

Greenhouse and Window Plants.

As the warm days of spring approach, the insect pests will multiply more rapidly, and greater care will be required in keeping them in check. Thorough washings will kill the Red Spider. The Mealy Bug is best destroyed by hand picking. Abundant fresh air will be needed, and an occasional fumigation with tobacco. The bulbs brought into heat will soon produce flowers. The propagation of bedding plants should be going on. Seeds of plants to go into the open borders may be sown in boxes and given plenty of heat.

Bee Notes for March.

In the southern part of the country, in fact, well up into Ohio, Indiana, etc., bees will have commenced work in earnest by the first of March. Until they can commence to gather pollen, their flight, for the most part, does only harm, and should be restrained as far as possible, without irritating them. Thus bees in the cellar should be kept there, and those out-doors may often be kept in the hives by shading the entrance. This is no small advantage, especially during the raw windy days, when the only result of flight will be evil, as the bees can gather nothing, and many that venture out will be borne far away by the wind, and be unable to return to the hive. In localities north of Central Ohio, bees will commence to store pollen about the first of April and up to the 10th. As soon as the bees can find pollen they may be carried out of the cellar, and by feeding a little every day to each colony, we may hasten on the brood-rearing, which is now the important work. As the bees commence to brood, they will consume a great deal of honey, and we must take care that they do not fall short of stores. Many times they will have enough honey in the hives to carry them through the cold part of winter, when, if properly cared for, they eat but very little, but not enough to last through the early spring. Feeding a little each day, of honey or sugar syrup, will prevent starvation, and farther

than this it will insure more rapid brood-rearing, and consequently greater returns, during the coming season.

In winter, even under the most favorable conditions, many of the old bees will die and fall to the bottom of the hive. All dead ones should be brushed away on the first warm day of spring, when the bees are permitted to fly. If movable bottom boards are used, we have only to raise the hive, and brush the bees aside. If the bottom board is nailed fast, the frames and bees should be transferred to a clean hive. In removing hives from the cellar or winter house, let each colony be placed just where it was the previous season. Otherwise some bees may fail to return to the hive, after they fly out, and be lost. In spring some colonies may be very weak, with only enough bees to cover one or two frames. In such cases, crowd, by use of a division board, all the bees on one or two combs, and cover warmly. Add more frames as they increase. By this practice, the writer, in many years' experience, never lost a single colony by "spring dwindling." The above caution is very important. We ought not to expect that a mere handful of bees should be required to keep a whole hive warm?

Bee Pasturage.

From the middle of March, and even earlier, in the far South, to the middle of April, is the time to attend to special planting for bees. As well remarked by Mr. Coffinberry at the National Convention, no subject connected with apiculture is more deserving attention. If each colony of bees in the four to six weeks of storing can give 100 lbs. of honey to the apiarist, what might be expected, could they be kept at work the whole season through? The great fall yield from autumn flowers, in Michigan and some other States, suggests the answer. The past season, in some sections, the autumn yield was more than all the rest of the crop. Yet such men as Doolittle, L. C. Root, and others, if we are rightly informed, get no autumn yield at all. Surely this matter of providing plants for bee pasturage is worthy of consideration.

Road-side tree planting is attracting much attention at the present time. Dr. Warder, of Ohio, and others, are giving the subject their best thought and study. The Legislatures of some States encourage tree planting by appointing "Arbor days"—days set apart for tree planting, and even by granting homesteads, and exemption from taxes to those who will devote time to this important work. Why do not bee-keepers see to it that the valuable Maples, which furnish early pollen and honey, are accompanied by the still more valuable and equally beautiful Bass-wood, and Tulip tree—called Poplar at the South—and in regions where they will do well, the Sourwood and Judas tree. Would not a little energy secure these trees at least in goodly proportions in the road-side tree planting? No trees excel in beauty the Bass-wood and Tulip-tree, and the great amount and excellence of the nectar which they furnish is well known. It is wise in the matter of bee food, as elsewhere, to add as many "strings to one's bow" as is possible.

Every bee-keeper may well see to it that waste places along road sides by Railroads, etc., are covered with Figwort, Rocky Mountain Bee Plant, Spider Plant, Catnip, Motherwort, and Melilot, or Sweet Clover. This last is a most valuable honey plant, but

some of our farmers object to it as a troublesome weed. How is this? Many who have tried it say it is not troublesome in the least. If a pest, why did Prof. Thorn, of the Ohio State University, recommend it lately as a good forage plant, and as very desirable for green manuring?

Bee-keepers should also try to get farmers to sow Alsike Clover, even if they have to furnish the seed. It will pay both parties largely without doubt. The Mammoth Red Clover is also a good bee plant.

As all bee-keepers well know, nearly all our plants fail in times of drouth. True the Mustards and Borage yield some honey, but not bountifully. Why should we not try to introduce the famous White Sage of California? This plant owes its very existence to its power of resistance to drouth. We may try if it can be grown in the East, and what the result will be in yield of nectar.

Let me urge bee-keepers not to allow the spring to pass without an effort to do something in the way of culture of special honey plants.

A Farmer's Experiments with Fertilizers.

BY PROF. W. O. ATWATER.

The fertilizer experiments described from time to time in the *American Agriculturist* have now been carried on during five years, by farmers, professors in agricultural colleges, and well-known experimenters in all parts of the country. From a large number of the reports of the experiments of 1881, I select one by Mr. Fairchild as an illustration of what an earnest, intelligent farmer may do. By these experiments Mr. Fairchild has put several direct questions to his soil, such as: 1st.—Do crops on my land demand more Nitrogen, or Phosphoric Acid, or Potash, than the soil supplies? 2d.—In what quantities, forms, and methods, can I apply these fertilizing elements with profit, and which of them with the most profit?

This was done by applying to accurately measured plots, carefully weighed quantities of the different elements, singly and in various combinations, and noting the results, as partly in-

dicated in the table herewith.—The fertilizers supplied Potash in Muriate of Potash; Phosphoric Acid in Superphosphate (dissolved bone black); Nitrogen in the Nitric Acid of Nitrate of Soda, in the Ammonia of Sulphate of Ammonia, and as Organic Nitrogen in dried blood; as well as in Peruvian Guano, which furnishes Nitrogen in several forms of combination; and finally these and other ingredients combined in ashes and in different farm manures.

Mr. Fairchild had for three years experimented with various materials and mixtures, including the "American Agriculturist Set" of eight, which several hundred farmers have tried in all the States east, and in some west, of the Mississippi, and in Canada.—In 1880 he undertook a series of "Special Nitrogen Experiments," (described in this Journal, March 1881). He had already found that Phosphoric Acid and Potash brought profitable returns, but on what crops and to what extent Nitrogen would be advantageous seemed less certain. He selected an old "worn out" pasture, laid out 25 plots of one-twentieth of an acre each, and applied the fertilizers as shown in the table.

The first seven (1 to 7) of the series of fertilizers were essentially the same as the "American Agriculturist Set." Starting with the "Mixed Minerals" of No. 6 (consisting of Superphosphate, and Muriate of Potash, but containing no Nitrogen), in the succeeding numbers Nitrogen was added in different amounts and combinations, as shown in the table, which by the way tells a great deal in small space to all who study it carefully. By using the same fertilizers on the same plots year after year, through his regular rotation, Mr. F. is gaining definite information as to the effect, the cost and profit, of the more expensive ingredients of the fertilizers used, particularly of the Nitrogen.

Mr. Fairchild's Experience, and what he has Learned.

Here is a summary of some of his statements: "....On the whole, Phosphoric Acid in Superphosphate and Bone, and Potash in Muriate, have thus far proved most efficient. At the same time, in many cases at least, I like some Nitrogen also,

EFFECTS OF NITROGENOUS FERTILIZERS.

EXPERIMENTS WITH OATS AND POTATOES IN 1881. BY MR. CHARLES FAIRCHILD, OF MIDDLETOWN, CONN.
SOIL.—Dark Loam, loam sub-soil, moist—had oats in 1877, rye in '78, grass in '79, and corn fertilized as below in '80.

Fertilizers. Kind and Amount per Acre.		Yield.			Increase.			Cost of ferti- lizer's, per bushel, &c.	Pecuniary Result.				
		Oats.		Pota- toes.	Oats.		Pota- toes.		Value of Increase.		Gain.		
		Grain	Straw		Grain	Straw			Oats.	Pota- toes.	Oats.	Pota- toes.	
													bush.
0	No Manure.....	26.9	1,180	28.0									
1	Nitrogen Mixture, 150 lbs.....	38.1	1,820	42.0	11.3		6.07	13.3	6.00	9.75	9.98	3.95	8.98
2	Superphosphate, 300 lbs.....	38.8	1,800	56.0	6.9		6.07	27.3	6.00	7.42	20.48	1.42	14.48
3	Muriate of Potash, 150 lbs.....	31.3	1,720	60.0	4.4		5.27	81.3	3.75	5.50	23.48	1.75	19.73
4	Nitrogen Mixture, 150 lbs., and Superphosphate, 300 lbs.....	51.9	2,660	94.7	25.0		14.67	66.0	12.00	22.55	49.50	10.55	37.50
5	Nitrogen Mixture, 150 lbs., and Muriate of Potash, 150 lbs.....	42.5	2,160	68.0	15.6		9.67	39.3	9.75	14.40	29.48	4.65	17.73
6	Sup. Phos. 300 lbs., and Mur. Pot., 150 lbs., "Mixed Minerals".....	38.8	2,280	90.7	6.9		1.087	62.0	9.75	10.30	46.50	0.55	36.75
7	Mixed Minerals (as No. 6), 450 lbs., and Nit. of Soda, 150 lbs.....	54.4	3,500	124.7	27.5		2.207	96.0	15.75	28.97	72.00	13.22	54.25
8	Mixed Minerals, 450 lbs., and Nitrate of Soda, 300 lbs.....	59.4	3,860	138.7	32.5		2.667	110.0	21.75	33.88	82.50	12.13	60.75
9	Mixed Minerals, 450 lbs., and Nitrate of Soda, 450 lbs.....	59.4	4,380	120.0	32.5		3.107	91.3	27.75	36.52	68.40	8.77	60.65
6a	Mixed Minerals (as No. 6), 450 lbs.....	36.8	1,760	94.0	9.4		5.67	65.3	9.75	8.56	48.98	1.19	39.23
00	No Manure.....	27.5	1,280	122.7									
10	Mixed Minerals, 450 lbs., and Nitrogen Mixture, 150 lbs.....	51.9	3,140	144.7	25.0		1.947	94.0	15.75	25.43	70.50	9.68	54.75
11	Mixed Minerals, 450 lbs., and Nitrogen Mixture, 300 lbs.....	55.6	3,380	144.7	28.8		2.187	116.0	21.75	28.93	87.00	11.61	65.25
12	Mixed Minerals, 450 lbs., and Nitrogen Mixture, 450 lbs.....	59.4	3,780	110.0	32.5		2.887	116.0	27.75	38.40	87.00	6.65	29.65
6b	Mixed Minerals (as No. 6), 450 lbs.....	38.8	1,760	135.8	6.9		5.67	81.3	9.75	7.18	60.98	2.57	51.23
13	Mixed Minerals, 450 lbs., and Sulphate of Ammonia, 225 lbs.....	61.9	3,700	134.7	35.0		2.507	106.6	21.75	34.29	79.95	12.54	58.20
14	Mixed Minerals, 450 lbs., and Dried Blood, 450 lbs.....	58.8	3,080	133.3	26.9		1.887	106.0	21.75	26.10	79.50	4.35	57.75
15	Peruvian Guano, 450 lbs., and Muriate of Potash, 150 lbs.....	54.4	2,980	96.0	27.5		1.787	104.6	21.75	25.85	78.45	4.10	56.70
16	Mixed Minerals (as No. 6), 450 lbs.....	35.0	1,760	29.3	8.1		6.67	67.8	9.75	7.87	50.48	1.88	47.73
000	No Manure.....	26.3	1,120	54.0									
A	Bone, 150 lbs.....	31.3	1,680	74.0	4.4		4.67	25.3	3.00	5.33	18.98	2.33	15.98
B	Bone, 150 lbs., and Muriate of Potash, 100 lbs.....	35.0	1,960		8.1		7.67	45.3	5.50	9.07	33.98	4.57	28.43
C	Same as B, and Sulphate of Ammonia, 100 lbs.....	45.6	1,980		18.8		7.67		10.75	15.03		4.28	

Explanations.—The Object of these experiments was to test the effects of Nitrogenous Fertilizers, in different amounts and combinations, upon the growth of the plants. **The Fertilizers.**—The ingredients and amounts of the fertilizers are such as are in ordinary practice, Phosphoric Acid and Potash being supplied in about the proportions that occur in a corn crop of 50 or 60 bushels, and Nitrogen in one-third, two-thirds, and in the full amount in the same crop. Thus the 300 lbs. of Superphosphate furnished about 48 lbs. of Phosphoric Acid; the 150 lbs. of Muriate of Potash about 75 lbs. of Potash. **Forms of Nitrogen.**—The Nitrogen was supplied as Nitric Acid in Nitrate of Soda; as Ammonia in Sulphate of Ammonia, and as Organic Nitrogen in Dried Blood, and in a mixture of these in equal parts in "Nitrogen Mixture." **Quantities of Nitrogen.**—The Nitrogen was applied at the rate of 24 pounds per acre in "one-third ration," Nos. 1, 4, 5, 7, and 10; 48 pounds per acre in "two-thirds ration," Nos. 8, 11, 13, 14, and 15; and 72 pounds per acre in "full ration," Nos. 9 and 12.

General Plan of Experiment.—Nos. 1 to 6 are "partial" fertilizers, furnishing the ingredients each by itself, and two by two, thus testing their effects separately and the capacity of the soil.—Nos. 6, 6a, 6b, and 16, "Mixed Minerals," are duplicates, each furnishing Phosphoric Acid and Potash (with Sulphuric Acid and Lime).—The others, from 7 to 15, are "complete fertilizers," each consisting of the "Mixed Minerals," with Nitrogen added in "one-third," "two-thirds," and "full ration," as above.—The plots were parallel strips eight square rods each. In 1880 corn was planted over the whole field. In 1881 the whole was divided into halves by a line crossing the plots, and one half devoted to oats and the other half to potatoes. Mr. Fairchild proposes to follow with wheat and grass, thus running the experiment through a regular rotation of several years, the same fertilizers being applied to the same plots year after year, while the crops succeed each other, as in his ordinary farm practice. The cost of the fertilizers includes \$5.00 per ton for freight and applying. Potatoes are estimated at 75 cts. per bushel, oats at 55 cts., and oat straw at \$12.00 per ton, which are fair rates for the region and season.

and think a 'complete fertilizer' is the most profitable for me."—That is, one containing Nitrogen, Potash, and Phosphoric Acid.

"...As to the outcome of my experiments with Nitrogen, that depends upon soil and crops.... In my experience thus far, Nitrogen in small quantities has generally proved profitable. Bone and Potash give a moderate yield of corn and oats on very poor land, but I like a good, handsome crop, and 24 lbs. of Nitrogen added, has more than repaid the cost in increased yield of corn and oats. That is, mixtures containing 'one-third-ration' of Nitrogen have been uniformly more profitable than 'Mixed Minerals' alone, or than mixed minerals with a two-thirds or a full ration of Nitrogen; and this is my experience on a larger scale."

"Yet in a number of cases Potash Salts with Bone, and also with Superphosphate, bring excellent crops without Nitrogen, and the addition of Nitrogen would be unprofitable."

"My neighbor, Mr. Williams, had a very fine piece of corn this year, with only 200 lbs. per acre of Bone Dust, and 150 lbs. of Muriate of Potash, the two costing \$7 per acre. I have noted quite a number of similar cases in this district. But my land was very badly run out when I took hold of it, and seemed to demand a little Nitrogen. So far as I have observed, soils that have been well manured, seeded down, kept in grass awhile, and then plowed again, do well with Potash and Phosphoric Acid, without artificial supply of Nitrogen. My corn in last year's Nitrogen experiments, rose with the amount of Nitrogen added, but the increase was not enough to pay the cost of the 72 lbs., or even of 48 lbs., though it did pay for the 24 lbs. And with the oats on the same plots the past season the yield rose with increase of Nitrogen, but the smallest quantity was the most profitable, as you can see by comparing Plot No. 7 with Nos. 8 and 9, and No. 10 with 11 and 12."

"But the potatoes gave a better response to the Nitrogen than the oats. With them the two-thirds ration, 48 lbs. per acre, was the most profitable, and the value of the increase exceeds the cost of the fertilizer; with 48 lbs. of Nitrogen, the gain was \$57 to \$65, while with either 72 lbs. or 24 lbs. it runs from \$40 to \$59. I notice also as a result of my experiments that the potatoes seem to respond to the Potash much more readily than either oats or corn."

Mr. Fairchild's Formulas.

To my question, "Have you arrived at any formulas as most suitable for fertilizers for your crops?" Mr. Fairchild answered as follows:

"Yes and no. That is, I have made up my mind what will probably do well on my land and under my conditions for some of my crops. But I can not say what would be most advantageous elsewhere, nor do I yet know exactly what will prove best for me years hence, or with crops I have not tested. For my corn next year I expect to use 250 lbs. of fine Ground Bone, 150 lbs. Muriate of Potash (containing 50 per cent actual Potash), and 24 lbs. of Nitrogen in the cheapest form I can get it. So far as my experiments go, they indicate that Sulphate of Ammonia and Nitrate of Soda do rather better than Dried Blood. Nitrate of Soda is cheap now, and I rather expect to use that."

"With potatoes and oats I have not experimented so much. Judging from the past season's experience, it seems probable that the above quantities of Bone and Potash Salt, and about double the Nitrogen will make a good mixture. For oats I am inclined to make use of the same proportions as for corn, but I think smaller total quantities would do upon these crops. According to analysis an oat crop takes less from the soil than one of corn."

The Hungarian Brome-Grass.—"M. V. M., Orange Co., N. Y.—We have seen the accounts in the French agricultural journals to which you refer, and should we live long enough expect to see many others. There are several grasses, of which this is one, that every now and then come into notice on a small wave of praise, and then disappear to come to the surface again a decade or so after. This "Hungarian Brome-Grass," or "Brome de Hongrie," is *Bromus inermis*, the "Unarmed,"

or "Awnless-Bromus," is a native of Germany and other European countries, and though it has been occasionally tried, it has never gained a position as a meadow or pasture grass. Sinclair said of his trials with it half a century ago, that they "offer no grounds on which to commend it to the notice of the agriculturist." The roots, or rather root-stocks, of this are barely inferior to the Quack or Couch Grass in their far-spreading reach and their aggressive character. This enables the grass to endure severe drouths, but its herbage is coarse, and like that of other species of Brome-Grass, not especially nutritious. Like the wonderful "Brome de Schrade," that some 15 years ago was to renovate French agriculture, it is likely to amount to little.

Farmer's Hot-Bed—Boxes.

"L. A. G." asks us: "Will a hot-bed pay a farmer with a small garden?" If he has had experience in the management of one, and will give the needed time to the care of it, and can find a sale for the plants he does not wish to use himself, he can no doubt make it a source of moderate profit. But if the care of a hot-bed will take time that can be better employed otherwise, it is not worth while for him to make one for the sole purpose of supplying his own garden with plants. It is better to buy the few needed plants, or better still, raise them in window-boxes. We have often referred to these, but their utility does not seem to be generally appreciated. They allow one to provide all the plants of early cabbages, cauliflowers, tomatoes, or whatever would be sown in a hot-bed, which are needed in an ordinary garden, at no expense in money and very little time or care in labor. Boxes are readily procured at any country store; as the window-box need be only three inches deep, an ordinary box may usually be sawed in two, using the top for the bottom of the upper half. These are to be nearly filled with light, rich soil, in which the seeds are to be sown, and kept in a sunny kitchen window. When the plants show the rough leaves, *i. e.*, the leaves that follow the seed-leaves, they are to be transplanted to other boxes and given more room. Some manage by the use of old tomato and oyster cans to raise a supply of plants. It is an easy matter, if there is some one in the family who will give the needed attention, to thus have an abundance of plants for the family garden.

Oil-Cake and Linseed Meal.

Several inquiries show that many suppose these articles to be the same. Linseed Meal is properly the Flax-seed or Linseed merely ground, and contains all the oil of the seeds. It is rarely, if ever, employed as cattle food, but is sold in the drug stores as a material for making poultices. Oil-cake is the residue left after Linseed has been subjected to a hydraulic press, for the purpose of removing the oil, so largely used in painting. The seeds contain about 33 per cent of their weight of oil, but the presses do not remove all this, and there remains from 10 to 13 per cent of oil in the residue, or Oil-cake. The Oil-cake, as it comes from the press, is very solid and difficult to break up; in England hand mills are made for grinding it, but in this country it is often sold in the ground state. The proper name for this ground product is Oil-cake Meal, to distinguish it from Linseed Meal, the ground unpressed seed. A correspondent in Guernsey Co., Ohio (his address not being legible, we cannot answer some of his questions), asks how Oil-cake Meal compares with corn for feeding stock. The two are fed for such opposite reasons that a comparison can not be readily made. Corn abounds in carbohydrates (starch, etc.), containing an average of 75 to 80 per cent, and only 8 to 15 per cent of Protein (nitrogenous matters). Oil-cake, on the other hand, has over 30 per cent of Protein, and only about 37 per cent of carbohydrates (exclusive of the oil). Oil-cake is regarded as a very rich food, and is used to mix with coarse fodder to increase its nutritious quality, and to make it equal to good hay, and is often used to feed to fattening and to milk-giving animals.

183 House Plans—Prize Plans.

In December Nine Prizes (three each of \$50, \$25, and \$15), were offered for best plans for Farm Houses, in three classes: I, those costing \$400 to \$1,000; II, those costing \$1,000 to \$2,000; III, those costing \$2,000 to \$4,000, reference being had to economy in construction, comfort, facilitating work and saving steps, closets, fair outward appearance, etc., as noted. To our surprise and gratification, no less than 183 different plans were offered, each so completely concealed by the *nom de plume*, that no guess could be made as to the personality or locality of the contributors. The accompanying sealed envelopes were locked up, and the plans and descriptions—almost a wagon load—were given to two competent Judges, who devoted much time during the month of January to a careful examination. After sorting each class down to half, then to a quarter, and finally to the one-twelfth of the whole, esteemed the best, a third Judge devoted several days more, calling in an expert to examine some of the details of estimated cost, when necessary. It was difficult to decide upon the final awards, as there were certain points of excellence and of defects in each. The whole Committee finally came together, and after weighing all points made their decision as below. (It will be seen that in one case the same competitor is successful in two classes. The Judges were quite surprised at this result, as the apparent name, and the penmanship were different in several cases where the same persons competed in more than one class. They were amused to find "Prairie Farmer," and "Dakotan" turn out to be two "Canadians," or one (?) when the envelopes were opened after the prizes were awarded. The Awards were:

CLASS I.—Cost, \$400 to \$1,000.

First Prize to "West,"—(D. S. Hopkins, Grand Rapids, Mich.)

Second Prize to "Poor Man's Dwelling,"—(A. C. Swartz, Girard, Kansas).

Third Prize to "Prairie Farmer,"—(John Dunlop, South Zorra, Ontario).

Plans next to the above, and in some points superior: "Sunny Home" (Mrs. L. J. Woodhead, Chattanooga, Tenn.); "Jackson" (Edward Pratt, Hanover, Mich.); "Ohio Farmer Boy" (D. A. Allen, Ellsworth, Ohio).

CLASS II.—Cost, \$1,000 to \$2,000.

First Prize to "House-keeper's Delight," (A. C. Swartz, Girard, Kansas).

Second Prize to "Circle," (C. R. Crabb, Coxsackie, N. Y.)

Third Prize "Anchor" (H. Fisher, Storm Lake, Iowa).

Plans next to the above, and in some points preferable, "White Pin Place" (L. K. King, Knoxville, Pa.); "Mount Union," (A. F. Hilley, Mt. Vernon, Ohio); "Buckeye," (Charles Warren, Jefferson, Ohio).

CLASS III.—Cost, \$2,000 to \$4,000.

First Prize to "Farmer's Wife," (Mrs. Wm. H. Burr, Redding Ridge, Conn.).

Second Prize to "Jackson," (Edward Pratt, Hanover, Mich.).

Third Prize to "Dakotan," (James Dunlop, South Zorra, Ontario).

Almost equal to No. 3, and in some points preferable, is one from "Anchor," (Henry Fisher, Storm Lake, Iowa).

The Committee exercised their best judgment, taking into account all points. No doubt each competitor will differ somewhat in opinion, but that could not be avoided. There were so many good suggestions, finely executed plans, etc., that the Judges would gladly have awarded fifty prizes.

A good many of the plans will appear in the *American Agriculturist*, as space will allow. None of the real names of the competitors are yet known, except those given above, as the addresses are still sealed and under lock and key.

The Editors and Publishers desire to here return their earnest thanks, to each and all of the One Hundred and Eighty-three contributors, who have done their best to aid in improving the Farm Homes of the country. Their work will not be lost or without future influence. It may yet be practicable to present in book or pamphlet form, a much larger number of the drawings and descriptions, than it will be possible to find room for in the pages of the *American Agriculturist* in a long time.



Fig. 1.—PERSPECTIVE VIEW.

Pioneer's House—Costing \$250 to \$500.

(Cost as Here Shown and Described, \$473.)

CLASS I.—FIRST PRIZE—BY "WEST"—(D. S. HOPKINS, GRAND RAPIDS, MICH.)

[On the supposition that people already settled have some kind of a house to shelter them, and intending to continue our series up to a cost of \$3,000 to \$4,000, or more, we begin by selecting from the 183 plans received, one that will probably meet the immediate wants of the greatest number of the

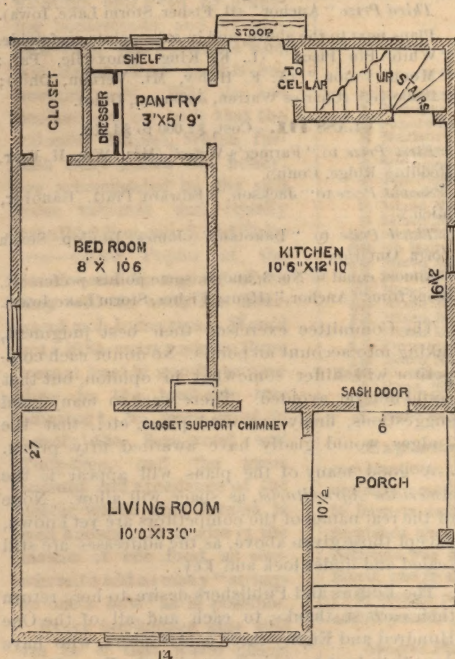


Fig. 2.—FIRST FLOOR.

millions from the older States, and from Europe, who are now rapidly locating in the vast regions of unoccupied territory at the West. The plan here given, if carried out as described, will make a convenient small house of very fair appearance. But

by the use of rough covering, simple building-paper walls inside instead of plastering, to be afterwards better covered and plastered, and by other economies, the first cost may be reduced to from \$250 to \$300. This first, rough method we have seen adopted by multitudes of prairie "homesteaders" in limited or straightened circumstances.

It will be noticed that the construction provides for prairie or other locations where stone or brick are not to be obtained, except from a distance, at large expense. Some omit the chimney, at first, and depend for a year or two upon a simple stove-pipe, carried through an earthen thimble in the roof. Where stone or brick are accessible, these may be used for the foundation pillars instead of the wooden posts. But almost any kind of wood will last several years, and some kinds for many years. If the least durable wood be used, stone or brick supports can be put in when decay takes place. So, also, the cellar can be fully excavated, and, if need be, walled up when the circumstances of the builder permit.—ED.]

DESCRIPTION.

Elevation (Fig. 1.)—The general plan accords with the usual custom on the broad prairies and other localities exposed to strong winds and hurricanes, viz., to build only a story-and-a-half, and to have the "family bedroom" on the first floor. A very little more expense would give higher rooms in the second story, and another room over the kitchen. The house has a rather pleasant look. Any mechanic of fair ability can vary the gables, and other features, at little or no expense, so as to produce pleasant changes in the appearance.

First Story (Fig. 2.)—The size and arrangement of the rooms are sufficiently shown in the engraving. The rooms are planned to save steps and facilitate work. The "living room" serves also as a dining-room and parlor, and is entered from the porch. The chimney, starting 2 feet below the second floor, can be directly reached by a stove pipe from every room. A small closet is placed under it.

Second Story. (Fig. 3.)—This has but two rooms. If there are several small children, the larger room will bear partial dividing with boards,

or curtains, or the two rooms be cut into three; raising the side walls two feet higher, would allow this to be done very readily. The small storage room under the lower roof can be reached from the stairs, or by a small door from the larger bedroom.

Cellar and Foundation. (Fig. 4.)—In the absence of stone or brick, or for economy, the sills are to be supported by wooden posts 6 to 6½ feet long, and 8 inches square; or rough logs hewn flat on two sides may be used. They are set as shown in the plan, 4 to 4½ feet in the earth, and about 2 feet above grade. For a small Cellar, begin 2 feet from the inner side of the posts and take out the earth, leaving the sides sloping inwards at an angle of about 45°, according to the kind and compactness of the soil, and deep enough to give 6 to 7 feet below the floor. The posts are to be boarded up on the outside tightly, and lined on the inside with tarred building paper. The paper at all corners is to be turned out upon the posts and secured firmly to them with lath strips nailed vertically over the paper. Then board up on the inside over the paper and fill the space between the walls with dry straw well packed in. With the excavated earth, bank against the exterior and grade off to throw water well away from the building. Provide a small window on each side for light and ventilation. For sills, we use 2x8-inch joists double, and set on edge, 2 inches smaller than foundation, on all sides. Nail 1x2-inch ribs on bottom edge of sills, for joist bearings, and notch joists accordingly.... All floor joists are 2 by 8 inches, set 16 inches apart at centers, well spiked in position.

Frame, etc. (Fig. 5.)—For frame siding, boarding, etc., use 2x8-inch plank, 15 feet long of even length on main sides, set perpendicularly flat-ways, the edges close together to make a close wall; spike them to the outside of the sills, the lower ends even with the bottom edges of the sills. Just under the second floor joist-bearing, set a rib 1x6 inches; just above this cut a notch into one edge of every other wall plank for the end of a joist, and spike the joist firmly in. As the upright planks are 8 inches wide, this will bring the joist centers 16 inches apart. At the top of the wall planks, nail on the inside a 1 by 10-inch strip forming a frieze, extending 2 inches above the wall plank. Notch the rafters into this piece so that their top edges will be even with its upper edge, and the roof boards can be nailed to it, thus closing all tightly here. This strip constitutes the plate—The

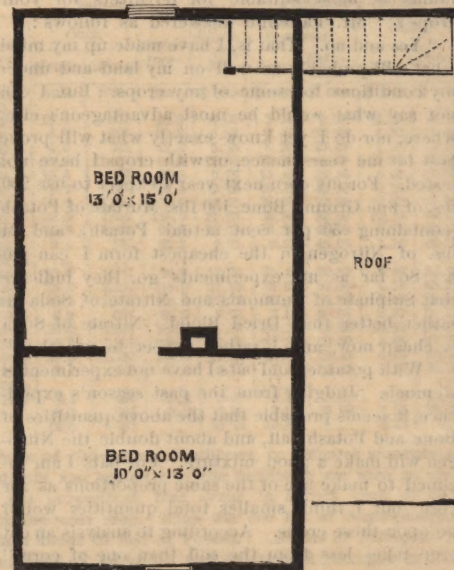


Fig. 3.—SECOND FLOOR.

rafters (and roof) should extend over the side 15 to 18 inches, the ends being tapered and dressed.

The Cornice is formed with roof boards dressed on the under side and outer edge, and nailed upon the bevelled ends of the rafters; gable finished in same manner, with verge boards, as shown. The rafters of 2 by 4-inch stuff, 16 inches apart at centers, with collar beam to each rafter of 2x4 inches. Plank up the gable ends the same as the side walls.

of it, applied every year; three parts seasonable and thorough cultivation, with no weed allowed to go to seed; two parts good onion seed; one part good sandy loam; and to this must be added cheap freight to a good market. With these conditions, any smart, thrifty farmer can raise onions, and make money. In the neighborhood of Jake Frink and Seth Twiggs some of the conditions are wanting.

CONNECTICUT.

Some New Rural Books.

Insects of the Farm and Garden (In Preparation).—By Mrs. Mary Treat. There is no popular work upon the Insect Enemies of the cultivator suited to the present time. Harris' work, though charming in its popular style, is local, and does not treat of the numerous insects that have appeared of late years. While it will retain its place among the standard works, it does not meet the every-day needs of the farmer and gardener. Packard's "Guide to the Study of Insects" is of great value to those who are more interested in the study of insects and their scientific classification than in their destruction. Prof. C. V. Riley's writings, admirable and practical as they are, are scattered through too many volumes to be available for general use. In view of the need of a compact treatise which shall enable any cultivator to identify the ordinary injurious insects and apply the best means for their destruction, the Publishers have invited Mrs. Mary Treat to undertake the work. Those who remember Mrs. Treat's articles in *Hearth and Home*, and later in *Harper's Monthly* and other periodicals, need not be told of the pleasing manner in which she presents scientific facts. But she is more than a popular writer; as an original investigator she has added much to our knowledge of both plants and insects, and those who are familiar with Darwin's works are aware that he gives her credit for important observations and discoveries. It is but proper to add that Mrs. Treat undertakes the work with the encouragement of Prof. Riley, who has in the most generous manner offered her the use of valuable materials. Orange Judd Company, Publishers.

Sweet Potato Culture.—By James Fitz, Keswick, Va. Nearly all the special crops—by which we mean those not usually included in the farm rotation, have had their culture described in separate treatises, save the Sweet Potato. This lack is now supplied by Mr. Fitz, who, residing in a locality where this crop is one of importance, is able to give the methods followed by those who have attained the best results. While the Sweet Potato is grown to the greatest perfection in certain tide-water localities in Virginia, it may be made a profitable crop much farther north. Within the recollection of many the cultivation of the Sweet Potato was not thought possible in the States north of Virginia, but with the introduction of early varieties and improved methods of treatment, its culture has gradually extended northward, until in all but the northernmost localities, the Sweet Potato, instead of being an occasional luxury, is now a common food.

There are but comparatively few localities in which the farmer can not readily raise a full supply for family use, and the work under notice will do much to promote this result, as it gives every step, from producing the sprouts or "sets," to the harvesting and storing the crop, with such varieties as are necessary in different localities, the whole forming a practical guide to the culture of this valuable esculent. Orange Judd Company, Publishers.

Peach Culture.—By the Hon. J. Alexander Fulton, *New Edition Revised, Enlarged, and in part Rewritten.* The various works on fruit culture treat of the peach as they do of other fruits in a general way; but until the appearance of Judge Fulton's book, in 1870, there was nothing that gave the operations of Peach Culture as a business. Living in the center of the greatest peach-growing district in the world, he was enabled to give every detail and to furnish a complete guide to those who would embark in the peach culture. During the 12 years that have passed since its appearance, while there

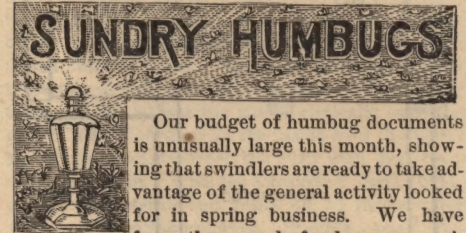
have been but few improvements in the general operations of the nursery and orchard, there have been many new varieties introduced. During this time there has been a marked improvement in the early varieties of the peach, and the introduction of these and the discarding of others, have made it necessary to rewrite this portion of the work. In its present revised form the volume is, as it was originally, the only practical guide to Peach Culture as followed on the Delaware Peninsula, and of course essential to those who would undertake the cultivation of this fruit in any other part of the country. Orange Judd Company, Publishers.

The Chemistry of the Farm.—By R. Warrington, F.C.S. This little work presents the relations of Chemistry to Agriculture in as popular a manner as the subject will allow. Its author is a co-worker with Lawes and Gilbert, at Rothamsted, Eng., where, as all who are readers of agricultural journals are aware, the most important investigations are constantly in progress. These are carried on by skilled experimenters, by the aid of abundant means, upon a scale sufficiently large to make the results of practical value to the farmer. While the author only occasionally refers to Rothamsted, and nowhere claims to speak for it, those who know of his position there, are warranted in regarding this work as in accordance with the results reached and the views held at that center of scientific activity. To the large number who have neither the time nor the inclination to take up the study of Chemistry, and yet would have a general idea of the relations of that science to the operations of the farm, this work will be welcome. While its style is clear and concise, it is far from being technical or dry, and the work cannot fail to be useful to every intelligent reader who is interested in the scientific aspects of agriculture. Orange Judd Company, Publishers.

The Care of the Lamps.

If a list could be presented of the deaths and frightful burnings that have occurred since the introduction of kerosene, it would be appalling. GOOD KEROSENE, that is, of the legal standard of quality, and that sent out by the best makers is far in advance of the legal requirements, *properly used*, need be no more dangerous than the old-fashioned sperm oil, or tallow dips. But it is vastly more so—Why? If we observe the accounts of these so-called "accidents," as they are given in the daily papers, it will be found that they are due to one of two principal causes: (1) Using kerosene to light a fire; and (2) to filling a lamp while lighted. Only the most ignorant can be so stupid as to pour kerosene upon a fire, and as such persons do not read, it would be a waste of time to caution them against it. Filling a lamp while it is lighted is something that ought never to be done. It can be avoided by always filling the lamps in the morning. This task should belong to some one member of the household, who should have a fixed and regular time for doing it; nothing ought ordinarily to interfere with or cause its postponement. It should be made a *duty*, to be discharged with all the regularity and punctuality of the daily meals. If good kerosene, of either of the best manufacturers be used, there is little danger of accident. Glass lamps ought never to be carried about, for the very reason that they are glass. This would hold, no matter what material they contain; even if it be sperm or lard oil, the breaking of a lamp is a disaster to be avoided. There is a chance that the one carrying it may slip or trip, or some other accident cause it to be dropped. With good kerosene, even the breaking the lamp and spilling its contents should cause no disaster in the way of burning; but all kerosene is not good, and the risk should never be taken. In "trimming" the lamps, only the small portion that is charred need be removed from the wick, and that is readily done by scraping with a knife kept for the purpose. If any substance collects upon the wick tube, that should be scraped off, leaving the brass or metal perfectly clean. After carefully scraping, wipe off the upper part of the wick tube, (and the wick), with a piece of very soft paper, to remove any small particles left in scrap-

ing. A wick may become unfit for use long before it is burned up. Many quarts of oil are carried through a wick, and in time the pores of the fabric become so filled with little particles of dust and other impurities that the oil contains, that its ability to take up the oil as fast as it is burned becomes greatly diminished, and when this occurs, a new wick is needed. If a lamp is filled *quite full* in a cold room, and then is brought into a warm one, the heat will cause the oil to expand and overflow, and lead to the suspicion that the lamp leaks. This should be avoided by not filling completely; knowing that this may occur sufficient space should be left to allow for the expansion.



Our budget of humbug documents is unusually large this month, showing that swindlers are ready to take advantage of the general activity looked for in spring business. We have fewer than usual of schemes especially intended to entrap farmers, an indication that farmers have grown more cautious and that swindlers find them less profitable customers. But the frauds upon the community in general are of interest to all citizens, including farmers. One of the most barefaced of recent swindles was

The "Ozone" Humbug.

and its rise and complete collapse form an instructive chapter in the history of humbugs. Last month, p. 50, under "What is Ozone," we endeavored to show our readers, by inference, that the article so widely advertised could not be Ozone. Just as the page with our Humbug article went to press, we managed to buy a \$2 package of the stuff sold by the Cincinnati chaps as "Ozone." On making a rough chemical examination, we found that the stuff, as we had expected from the directions for its use, was merely Flowers of Sulphur mixed with some black powder. A little later we received a report made by our friend, R. B. Warder, Cincinnati, O., to the Mechanics' Institute, giving a detailed account of his microscopic examination and chemical analysis of the stuff, in which he showed that this "Ozone" was only

Sulphur and Lampblack,

with some volatile oil to give it an odor. As the package, about a pound, cost the maker nearly five cents, and sold for \$2, Mr. Warder is right in his conclusion that "Sulphur becomes extremely expensive when purchased under the name of Ozone." But "Ozone" failed, and the advertising firm that sent its deceptive announcements broadcast over the country, has failed also. This concern issues a pathetic circular, showing that the "course which has been adopted" by the *American Agriculturist* and some other newspapers caused their ruin. As this "course" was merely to show up one of the worst swindles of the age, we think these advertising agents will find little sympathy.

The Michigan Man too Late.

"Ozone" as applied to a parcel of brimstone is, to say the least, a misnomer, but here comes one who loudly proclaims the preservative qualities of

"Ozocerite, (By some called Ozone),"

in much the same language and makes for it similar claims that the Cincinnati chaps did for their Ozone. What a jumble of fraud it all is! Here we have the name "Ozone," which belongs to a form of oxygen, given to colored brimstone, while another, thinking to improve on it, says "Ozocerite, sometimes called Ozone"—Sometimes, by whom? Does not the chap know that *Ozocerite*, (or *Ozokerite*), is a name belonging to a fossil wax found in Southern Europe, which has been in use for years in making candles, and has no more to do with ozone than ozone has to do with brimstone? The short career of the Cincinnati "Ozone" should warn the advertising agents to take no risks on "Ozocerite."

An Exquisite "Wash Rag."

The ladies in the suburbs of Newark, N. J., have

been visited by a good-looking young man, who could talk fluently about pictures and art. He had seeds for sale, each of which would produce a plant, with a most beautiful red, white, and yellow flower. As each flower opened it would disclose—of all things in the world—an exquisite "Wash Rag." Some sales were made at six seeds for a dollar, each seed warranted to produce three wash rags. One lady wrote us that, at that price, the flowers ought to produce lace pocket handkerchiefs; but some people are unreasonable. It is said that the wealthy persons of the neighborhood were pretty generally victimized. As the seeds are said to be somewhat like those of the pumpkin, but black, we suppose they may be those of the old "Dish Cloth," or "Bonnet Gourd," or "Sponge Cucumber" (*Luffa*) which we figured several years ago. The cucumber-like fruit, when ripe, has a net-work of fibres, which may be used in place of a sponge. But wash rags in the flowers!

Fraudulent Subscriptions.

Getting subscriptions under false pretenses is an old swindle, which has recently been revived in several localities, and especially in Pennsylvania. The chap at last accounts called himself Loring (but his name is sometimes Arlington), and took subscriptions for

"The Milliner and Dressmaker" of Lord & Taylor,

thus making use of the name of a leading New York Dry Goods house, known all over the country. Our correspondence shows that the chap has taken a good many subscriptions at \$2, for a paper which has no existence. Messrs. Lord & Taylor publish no paper. The chap is a thorough swindler. Look out for him. Now and then we hear of a swindler taking subscriptions for the *American Agriculturist*, but the Postmasters have helped us a good deal in detecting such chaps, and it has got to be a very unsafe business. This Journal has friends and voluntary canvassers almost everywhere, who need to show no false "certificates of agency," and any man operating as an "agent" where he is unknown, and who has no undoubted credentials from parties who are known to those they approach, may as a rule be given a wide berth.

A Swindler Caged.

We have often shown how difficult it was to catch those swindlers who offer to sell Counterfeit money or "Queer," but who never have any of the article. One William Jones was sent to State Prison for 13 months in January last, not for offering bad money, but for using the mails for swindling purposes. These chaps so generally go clear that a conviction is worth recording. This good precedent having now been established, the determination of the Postal Authorities to not let that department aid in imposition will greatly aid in checking the operators of many varieties of swindling.

The Marriage Endowment Associations

are among the most recent of swindles, but they bid fair to be short lived. The State Auditor of Iowa has notified the Fairfield Association of that State, that, being really an Insurance Association, it must conform to the laws and make reports to the State Superintendent of Insurance, or he will proceed against its officers. He says: "The public have a right to know what business you do, and how you do it." As such concerns can not stand publicity, several in Iowa have given up business.

"Religious Lotteries."

Holding that any lottery, by whatever name it may be called, or whatever shape it may assume, is wrong in principle, and opposed to the best interests of the community, we do not think that any object, however worthy in itself, can be warranted in resorting to a lottery for the purpose of raising funds. We have received schedules and tickets issued in aid of a church in Canada. We might not notice this, were we not told that this

Lottery has the Episcopal Blessing,

While not accustomed to speak lightly of things which others hold sacred, yet we must protest when told that the purchase of a ticket in a lottery "entitles the purchaser to the spiritual benefits, and one

mass weekly for the repose of their deceased friends for two years from the date of holding the Bazaar." Comment upon this mixing of the sacred and the secular is not necessary.

The Electric Battery Business

must be dull, as one of the most prominent makers of those useless metallic toys now comes out with "Electro-medicated Glasses." The picture looks like common spectacles, but appearances are deceitful. These glasses, we are told, "are produced by heat generated by electricity," while the medicated properties contained in glass make it as hard as a diamond." After that we are prepared to learn that several "Royal Highnesses," and many Dukes and Earls wear these glasses. Electricity is a wonderful thing!

Medical Matters.

We have several pamphlets, which, professing to be for the benefit of young people, are vile, and can only be described by the unpleasant epithet "nasty." Some of these are of a sensational kind and would no doubt convince many young people that they are in a dangerous condition, and that their only hope is in the medicines, the sale of which they are intended to promote. A proper regard for decency prevents quoting or minutely describing them. We can only advise young people to let all these things alone. Do not read them. They are of no use and only awaken needless fears. Be assured that all these claims to superior knowledge of medicine or to the possession of especial curative means are false. The chaps who write and publish these vile pamphlets have not a tittle of the knowledge of your family physician. They only want money. If one has a real trouble of any kind, he does not need one of these books to tell him of it. Do not send money to some far-off quack, but consult, in all confidence, your family physician. Any regular physician knows at least as much, usually a hundred times more, of these secret troubles or private diseases, than any of these advertising chaps. If they once get hold of your name they will ply you with exaggerated pamphlets, pictures, statements, etc., startling enough to make a well person sick, or to think he is. Then follow advice, medicine, etc., which will be kept up under various pretexts and promises, as long as a dollar can be squeezed out of the victim. This is the universal practice of all this class of private disease men, whether they advertise with a string of (false) medical titles, or as a benevolent association seeking to benefit the afflicted.

Oregon—Washington Territory.

If starting out now as a young man or under middle age, to engage in farming in a new country, and grow with it, we should be strongly tempted to pass beyond the Rocky Mountains, and settle on the Pacific Coast, in the western portion of Oregon, or Washington Territory. The climate, the soil, and the location indicate that these will some day take a prominent part along with California, not only in feeding the Pacific Division of our country, but also in contributing materially to the consumption of other lands. The wheat product of 1881 is estimated at over fifteen million bushels, of which twelve million bushels will be sent to foreign countries.

Oregon alone, with a population of 174,768, contains nearly 61,459,200 acres (96,030 square miles), or 1,052,800 acres more than New York and Pennsylvania combined. — Washington (population 75,116), has 44,275,200 acres (69,180 square miles), or 1,737,600 more acres than all the six New England States. Together, Oregon and Washington equal all New England, New York, and Pennsylvania, with half of New Jersey; or all of Indiana, Illinois, and Iowa, and enough over to make two more States nearly as large as Massachusetts. So much for the areas of the North-western corner of our country.

Though in the latitude of the Canadas, the climate of even the northern part averages about that of the southern New England States, and seldom falls so low in winter. A wide belt runs nearly 500 miles north and south between the Pacific Ocean

and the Cascade range of mountains, has a full rain-fall, and all farm and garden products grow in perfection. A good deal of this is covered with majestic pine forests, but there is also a considerable area of fertile soil covered with mixed forest trees, the removal of which is the only obstacle to pioneer farmers, as was the case in Michigan and Western New York. — A satisfied tone always pervades the letters from the numerous readers of the *American Agriculturist* in Oregon, and especially in Washington Territory. New railroads, projected and building, will soon bring a large region into easy communication with the East and South, while the numerous rivers and the Pacific Coast harbors open ready communication with the teeming population of the Islands of the Pacific and the Eastern Continent.

The majestic Columbia River passes directly between Oregon and Washington Territory to the Pacific, and it will perhaps surprise some of our eastern readers to be told that Portland, 100 miles up the Columbia River, but 10 miles from it on the Willamett branch, contains to-day 23,000 inhabitants, has an assessed valuation of ten millions, with twenty individuals and corporations each paying taxes on one hundred thousand dollars; that its exports for November alone were worth \$1,500,000, carried in 21 deep-water vessels, and that at one time in December, 25 sea-going vessels were loading and unloading at its wharves. We noted in December that over 26,000,000 lbs. of salmon were canned in Columbia River alone during 1881.

In thus calling attention to these magnificent north-western regions, comparatively little known by the majority of people, we do not ignore the great agricultural attractions of California, and of the almost boundless and as yet but partially occupied farming regions east of the Rocky Mountains.

An Ensilage "Congress" was held on the 25th and 26th of January, under the management of Mr. J. B. Brown, of the New York Plow Co. Mr. Brown was early convinced that the important experiments and practical results of the Frenchman, Geoffart, repeated in this country first by Mr. Francis Morris, of Baltimore, indicated a revolution in farm practice, which, as a manufacturer of agricultural implements, he might well take advantage of. This revolution seems really imminent. Practical farmers, gentlemen farmers, and people who wanted to be farmers, to the number of one to two hundred attended this conference. "Congress" sounds very grand; it was really an "experience meeting." Mr. Brown's newest and best of all fodder cutters were at the rear of the room, where was spread a lunch-table of crackers and cookies and cheese, and excellent hot coffee. The tables near the chairman were covered with specimens of ensilaged crops—ensilage of maize, in variety, ensilage of rye, of clover, of oats, of grass, etc., all well preserved; most of them having a somewhat agreeable odor. Butter was shown also made from ensilage-fed cows, not one specimen however was of really fine flavor and odor. Butter made on good clover hay and corn meal would have beaten it out and out. All but one specimen, brought by the chairman, was colored, but the pale lardy pat had the best flavor of all in the judgment of several experts. There was considerable diversity of opinion in regard to crops, management, cultivation, the amount which could be raised per acre, etc., but all agreed as to its value and as to the great economy of land effected by it. After several thoroughly practical farmers had declared that the greatest yield of corn fodder weighed green, as it was cut, which they could get was 15 to 20 or 25 tons to the acre, Mr. Mills, of Pompton, declared his belief that he had cut upwards of 70 tons. He estimated his crops cut, upon 13 acres, by weighing a cubic yard, cut from different parts of his silo. The meeting was a very pleasant one. Those in attendance represented large wealth and intelligence, and had a most earnest interest in the subject. The *American Agriculturist* has kept its readers informed in regard to the whole subject of ensilage of green crops, and the facts presented at this meeting tended to confirm the claims made for the practice.

Products of Kansas in 1881.

Facts and Figures from the Report of the Kansas State Board of Agriculture.

The total value of the field crops of Kansas for the past year exceeds that of any previous year in the history of the State by fully 40 per cent. Neither the aggregate nor the average yield of the staple crops has been as large as in some other seasons, but the better prices obtainable in the present markets have greatly enhanced the gross valuation. In 1879, the total value of the twenty-two principal crops was, in round numbers, \$60,000,000; in 1880, \$63,000,000. In 1881, the same field crops foot up \$92,000,000. This is certainly encouraging to Kansas farmers, who for a time felt a trifle blue because their harvests were lighter than usual.

The following table shows the yield and valuation of the corn and wheat crops in Kansas for the last five years:

Year.	Corn. Bush.	Value.	Wheat. Bush.	Value.
1877	103,497,831	\$30,306,184	14,316,705	\$12,640,123
1878	89,324,971	17,018,968	32,315,358	18,441,065
1879	108,704,927	26,562,674	20,550,936	18,443,710
1880	101,421,718	24,926,079	25,279,884	20,980,667
1881	100,760,542	44,859,993	20,479,639	21,705,275

Twenty per cent less corn this season brings eighty per cent more cash than last; and the wheat crop of less than 21,000,000 bushels is worth \$3,250,000 more than the enormous crop of 1878 (32,315,358 bushels), which was about sixty per cent greater.

In the above statistics of "field crops," the products of orchards, vineyards, and market-gardens are not included. The horticultural products alone for the year amount to \$1,882,365; and the garden truck to \$496,083. Add to these the value of slaughtered animals, butter, eggs, cheese, etc. (all included under products of live stock), \$21,692,888; the increase for the year in the value of all farm animals, \$6,950,504; and the value of wax and honey, \$22,210; the total footings of the Kansas farmers' credit column for 1881 is \$122,946,490, a good round sum! After corn and wheat, the next crops in the order of their aggregate value are:

Prairie Meadow Hay.....	1,216,316 tons,	\$6,218,218
Millet and Hungarian.....	752,478 tons,	4,518,970
Oats.....	9,900,768 bushels,	3,855,750
Irish Potatoes.....	1,854,140 bushels,	2,710,377
Sorghum.....	3,899,440 gallons,	1,745,871
Broom Corn.....	32,961,150 pounds,	1,480,116
Flax.....	1,184,445 bushels,	1,357,944

The total number of acres under cultivation in the State was 9,802,719; an increased acreage of 12 per cent over that of 1880. South-Central Kansas, and the Arkansas River Valley in general, show the best results for the year of any portion of the State. The banner corn and wheat counties lie in this region, and the live stock interests are here developing most rapidly.

The wheat prospects for the ensuing season could not be better. In all parts of the State the stand is reported as even and strong, the color good, and every indication for a splendid crop.

On the whole, however, Kansas has done well in 1881, in the midst of an almost universal drouth over the great agricultural States. Eastern Kansas suffered severely from the protracted heat and the lack of rain; but the South-Central and South-Western portions of the State were favored, and these by their bountiful crops of every kind sustained the hitherto excellent reputation of Kansas for fertility and productiveness. P. B.

Potato Bug Swindle.—Reports come to us from Western readers of sharpers who go about the country selling packages highly recommended as a "simple, sure, cure for Potato Beetles."—On the outside the parcels are labelled: "Don't open to expose to the air until ready to use," and "Directions for use inside."—After the swindlers are at a safe distance, the purchaser being ready to apply the "safe cure," finds on opening the parcel, two blocks of wood, with the "direction": "Put the beetles on one block and mash them with the other!"—This reminds us of a trick upon a Canadian Custom-house officer, that took place on the Niagara River boundary in our boyhood days. A Yankee took over a load of American cheese, and entered it at a low valuation. The officer took advantage of the law allowing him to buy any article at the valuation, and sell it on Government account. The seller returned to this side, cut out a lot of oak blocks, pressed cheese curds around them in the form of cheese? and crossing the river entered them as "White Oak Cheese" at the same price as the previous lot. The officer took these also at the "valuation," but before he had sold them the seller was at a safe distance on this side, and besides they were what he called them.

The Agricultural College of Ohio is a department of the Ohio State University at Columbus. The propriety of appointing a wide awake, enthusiastic young man as professor of Botany and Horticulture is shown by the steps Prof. W. R. Lazenby has taken to

found a Museum of Agriculture and Horticulture, not only for the use of the College, but which shall be open to all who choose to visit it. Prof. L. asks the farmers, gardeners, etc., of the State to contribute seeds, woods, insects, or whatever will be of use in illustrating any branch of Agriculture or Horticulture. He incidentally mentions the seeds of weeds as desirable. We would suggest on his behalf, and that of the Museum, that nothing can be more useful than a collection of the seeds of the commonest weeds. Weeds are so abundant everywhere, that no one thinks of collecting their seeds. It is easy enough to find the seeds of rare tropical plants, but if one wishes to identify a seed, as that of the Canada Thistle, Dandelion, or Cockle, he will be puzzled to find specimens for comparison. Let our Ohio friends help Prof. Lazenby make a museum creditable to the State.

Hemorrhoids in Cattle.—A. E. Morris, Dodge Co., Neb., wrote that the cattle of his herd were affected with what appears much like hemorrhoids (piles) in the human patient, each passage being accompanied by bleeding. The letter was referred to Dr. A. Liantard, Professor in the American Veterinary College, New York City, who writes:—"This disease is very rare in cattle, and when it occurs is due to excessive constipation. The remedy is to give laxative food and medicines that will loosen the bowels, such as Glauber's Salt. An application of cold water to the parts will allay the swelling and pain."

The White Grub in Ill.—W. H. Grace, Stark Co., Ill., writes:—"Corn has been in this county the nearest a failure that I have known in over 35 years, due mostly to the larva of the May Beetle."—This and other reports indicate that this trouble is on the increase, and it can only be controlled by united action.

Crude Petroleum.—"H. Van I." Petroleum will not answer as a medium for mixing paints of any kind. What are called "drying oils," like linseed oil, when exposed to the air, form a thick, solid substance which holds the powder used as paint, attaching that to the wood, so that it can not be rubbed off. If petroleum be mixed with a powder, such as white lead, a part of the petroleum would evaporate, another part sink into the pores of the wood, and the paint itself rub off as easily as common lime-wash. The proper use of Crude Petroleum is as a preservative. Applied in successive coats to shingles, implements, etc., as much as the wood will take up, it prevents decay in a remarkable manner.

Large Persimmon Trees.—C. F. Willetts, Queens Co., Long Island, brought us some unusually fine Persimmons, a portion of the crop of fourteen large trees, supposed to be over 100 years old. These trees are about 50 feet high, and have but few branches. It is not unusual to find trees as tall as these in the Southern and Western States, but we think it must be an exceptionally large size for the Persimmon to attain in a locality so near its northern limit, which is Rhode Island.

The Indiana State Agricultural College, of Purdue University, reports 254 students, though only two of them are in the special Department of Agriculture. The School of Chemistry and of Industrial Arts, have the largest patronage. This institution has abolished the secret fraternities. An appeal to the courts to test the right of the Faculty to exclude students who persisted in keeping up such societies, has been decided in favor of such right. The ground taken by the Faculty seems all the more remarkable, because among them are professors who in other colleges had been members of the four leading "Greek letter fraternities."

Indiana Wheat and Corn Crops.—The State Bureau of Statistics has reported for 1881: Wheat yield 30,625,668 bushels; in 1880 the crop was 47,130,684 bushels, a falling off of over 16,500,000 bushels, or 35 per cent. Of Corn, 71,387,075 bushels in 1881, against 87,335,014 bushels in 1880. Decrease about 16,000,000 bushels, or nearly 18 per cent, despite the increased acreage in both crops—mainly the result of the drouth.

Fifty-nine Million New Coins—Weighing Money.—During 1881, at the Philadelphia mint alone, 59,174,635 new coins were made, viz., 2,360 double eagles (\$20); 3,877,260 eagles (\$10); 5,708,800 half eagles; 550 \$3 pieces; 680 quarter eagles; 7,660 gold dollars; 9,163,975 silver dollars; 10,975 half dollars; 12,975 quarters; 24,975 dimes; 72,375 five cent pieces; 1,081,575 "nuisances" (3 cent pieces); 39,211,575 cents, and 960 "trade dollars." Total value: \$76,976,165. To count these pieces, 54 persons would have to work nearly nine hours every week day in the year and count one piece every second. But they are estimated by weight. To an American it is a novel sight to go into the Bank of England, and other large banks there, and observe that in receiving and paying out coin they do not count it,

but the clerks shovel it into scales with a small hand scoop, and weigh out so many pounds, shillings, or pence. Besides the advantage of quickness and accuracy, this method often detects spurious or defective money, when a number of pieces vary a trifle from the exact weight. When this occurs they divide the sum into equal parts in the two scales; then the lighter half, if that is the defect, is again divided, and so on until the varying piece is soon discovered.

Lady Apples.—Had Mrs. G. W. Z. given her address we could have written her about the Pomme d'Apl—most commonly called the Lady Apple. The reason her apples do not keep well is because they are in too dry a place. If barrelled and placed in a cool cellar, they should come out plump and fresh for the holidays. If those upon her trees the past season have lost their gloss and freshness, it must be owing to the long drouth, which at the East caused fruit to ripen prematurely.

Hot-Beds with Fire-Heat.—Some notes with reference to the hot-beds, described in Dec. last, come from Wasco Co., Oregon. J. Hunsaker writes, that he has used such beds for several years, and would caution those who build such in a light soil, to always lay the stones for the flues with clay mortar. The writer of the article referred to lays them without mortar, which our Oregon friend says, will, in a light soil, allow the smoke to pass through and injure the plants. He uses 12-in. boards for the chimney, following the chimney-builders' rule, that the chimney should not contain anywhere beyond the throat a less number of square inches than there are at the throat.

The Strawberry Season.—As an illustration of the manner in which steam transportation interferes with the regular succession of the seasons, we may cite the Strawberry crop. The first strawberries in the New York market—at least the first we saw—arrived on Jan. 24th, from Florida. The supply from this State will be followed by that from Georgia, the Carolinas, and so northward to Virginia and New Jersey, making a continuous season until the far northern localities send the last strawberries in July and possibly August. This is a great country in some respects.

What Varieties Shall I Plant?—We have a number of letters asking us to name the five or ten best varieties of apples, pears, etc., suited to the writer's locality. Though these letters come from Maine to Colorado, it would be an easy matter to give the lists so far as experience shows the varieties that succeed best in each State. But there is a question even more important, that our friends do not usually consider. It is evident, from most of these letters, that the planting is to be made with a view to selling the fruit. The first consideration should be the needs of the market where the fruit is to be sold. Varieties meet a ready sale in St. Louis and Chicago that are little if at all known in New York and Philadelphia. The difference, while considerable, is not so great in late keeping fruits, but with earlier varieties, which are often the most profitable, inquiry should first be made as to the kinds most salable in the market to which the fruit will be sent.

Setting Strawberry Plants—Distance.—"L. R. G."—The answer depends on whether you refer to a small garden, or to field culture. If the plants are to be worked with a horse cultivator, make the rows 30 to 36 inches apart; otherwise, two feet, and set the plants one foot apart in the row. You can then adopt either method of cultivation that may be preferred. All the runners may be cut off as they appear, leaving the plants in separate stools, or you may turn a part of them so as to take root in the intervals and form a matted row, the latter being, on the whole, preferable with most kinds.

Changing His Corn.—"G. S. S.", Pa., is not altogether satisfied with the corn, one of the Flint varieties, that he now grows, and asks our advice about procuring a kind of Dent corn from Minn. Indian corn is, probably more than any other plant, affected by local conditions. When a variety has been cultivated in a neighborhood or on a farm, and a selection of what appears to be the best, is planted year after year, there is established after a while, if not a variety, what florists call a "strain." There are all over the country those kinds of corn that have been, so to speak, bred to suit the peculiarities of a particular locality. This being the case, it is not advisable to make a wide step from the known to the unknown; to give up a well tested kind, and substitute one that has not been tried. If a change is desirable, we should advise seeking a better kind in the vicinity. If it is wished to substitute the Minnesota variety, it is better to begin with merely enough to furnish seed for another year, provided the results of the trial crop next season should warrant it. Violent changes in an important crop are not safe.

Western Farm Homes.

PHILADELPHIA, Jan. 31, 1882.

ORANGE JUDD Co.—Sirs: According to your article in the January number on the West, I really expected a better article: not thinking that your correspondent would be captured by railroad monopolists, but give us some practical information regarding the West. For instance, what amount would be needed by a family of four? I would have furnished quite a different article to your readers.

I am a mechanic, and have written to the West for information, but they have not answered it yet, and I will likely be in Minnesota by the time of your next issue.

If you wish a correspondent I am open for engagement.
A. N. HALLOWELL,
Philadelphia, Pa.

Answer.

The article alluded to, in our last paper, which aimed to cover the whole question of Western Lands for sale, cost Mr. David W. Judd several weeks and several thousand miles of travel.

It was carefully prepared, not for the benefit of any corporation, but expressly for the benefit of the readers of this paper. None of the railroads requested or solicited descriptions of their lands. The facts presented in such a condensed form were gathered by Mr. Judd during a long tour, and are the result of personal observations and questions propounded to those having charge of or living upon the various lands described. So far from being of any financial benefit to the paper, this tour entailed a heavy cost upon the publishers.

If the above reader expected the *American Agriculturist* to tell him how much land he wants for a family of four, what it will cost him to go from Philadelphia to forty or fifty different Western points; how much it will cost him to take his stock, etc., etc., we have simply to say to him, as to others, forty extra pages would not have contained particulars enough to meet the wants of individual readers. Such information, however, we furnish from time to time.

We gave a general outline of the country and data from which readers could draw their own inferences and conclusions as to what points they should migrate to.

Some of the Railroads described have written complaining that more space was not given to their respective roads. We have to say in reply, that we endeavored to describe all impartially, and as we said before, we wrote the article for the benefit of our readers.

Another point; since the issue of our February number, bills have been introduced both in the Senate and House of Representatives repealing the Land Grants of various Railroads—some of them included in our article. The grounds given are failure to conform to original conditions of grants. One of the roads against which the bills appear to be directed, is the St. Paul and Manitoba R. R. in Minn., the lands of which were described at considerable length in our article. By our next issue we shall be able to know more about the matter. Meanwhile we would of course advise those of our readers who may have thought of purchasing along this road, to wait for the present. Should these grants be annulled, large tracts of lands would probably come into market at government prices.

Careless Letters and Lost Ones—Was Yours Among Them?—The English Post Office recently returned to our Dead Letter Office a letter containing a \$25,000 draft, mailed by a banking institution of New York City, directed to "National Provincial Bank of England, Belfast, England," instead of "Provincial Bank of Ireland, Belfast, Ireland." When large banking institutions make such mistakes, and with such large sums, it is less surprising that so many other people are sometimes careless. Our Post-Master General's last report says over one thousand million letters (1,046,007,348) were mailed in our country during the year. Of these over three millions (3,323,621) went to the Dead Letter Office, or one in every 315, among which were 18,617 containing \$4,058,780 in money, and 22,012 enclosing checks, drafts, etc., for \$1,899,062—that is, 38,629 letters containing cash remittances went to the Dead Letter Office through improper directions or lack of stamps. A much larger number were doubtless returned

to the writers by the local postmasters. If one letter out of every 315 is thus miscarried through the carelessness of the writers, is it any wonder that Publishers and others dislike to bear the loss of money reported to have been sent, without registry? If our correspondents were as careless as the average, our lost letters would run up into hundreds every year.—But this does not tell half the story. A greater number who get the outside all right, omit their names, or their State, if not their P. O., and, strange to say, second or third "blowing up" letters still omit some necessary item, as the name, or any indication which of the multitudes of "Washingtons," or "Hamiltons," or "Jacks," or "Middletons," etc., they hail from. Others send money in unsealed letters—a bad temptation to P. O. clerks. People don't mean to make mistakes, but they do—though no one can believe he did—and the publishers get all the blame.

Area and Relative Size of the States.

Some comparisons of the relative areas of several States will be interesting, and also help the memory. Texas, cut into equal parts, would make 212½ States as large as Rhode Island; 129½ Delawares; 54 Connecticut; 34 New Jerseys; 32 Massachusetts; 6½ Ohios; nearly 6 New Yorks or Pennsylvanias; nearly 5 Illinois or Iowas. Grouping the States nearest alike in size we have, in square miles:—

Rhode Island.....1,250	New Jersey.....1,815	S. Carolina.....30,350
Delaware.....2,550	Massachusetts.....8,315	Maine.....33,040
Connecticut.....4,900	N. Hampshire.....9,305	Indiana.....86,350
Vermont.....9,565	Kentucky.....40,400	
Maryland.....12,210	Ohio.....41,060	
West Virginia.....24,750	Virginia.....42,450	
Tennessee.....42,050	Alabama.....52,250	Florida.....58,680
Pennsylvania.....45,212	N. Carolina.....52,250	Michigan.....58,915
Mississippi.....46,810	Arkansas.....53,850	Georgia.....59,475
Louisiana.....48,720	Iowa.....56,025	
New York.....49,170	Wisconsin.....56,040	Missouri.....69,415
Illinois.....52,080	Nebraska.....76,855	

Kansas.....	82,080		<i>Territories.</i>	
Minnesota.....	81,365	Dist. Columbia	70	Arizona.....113,020
Oregon.....	96,030	Indian Ter.....	64,690	New Mexico.....122,580
Colorado.....	108,925	Washington.....	69,180	Montana.....146,080
Nevada.....	110,700	Idaho.....	84,500	Dakota.....149,100
California.....	158,360	Utah.....	84,970	Alaska.....577,890
Texas.....	268,730	Wyoming.....	97,890	

Besides the above, there is of unorganized territory (Long. 100°—103°; Lat. 36° 30'—37°), 5,740 square miles; Delaware Bay, 620 sq. ms.; and Raritan and lower New York Bay, 100 sq. ms. Alaska we give from estimate; its area is not fully known.

The above are the gross areas, that is land and water included. In the whole United States (exclusive of Alaska) there are 3,025,600 square miles. Of this 2,970,000 sq. ms. are land surface, and 55,600 sq. ms. of water surface, of which 23,300 sq. ms. are in lakes and ponds; 17,200 in coast bays, gulfs, sounds, etc., and 14,500 sq. ms. in rivers and smaller streams. The whole water surfaces in the total areas of the different States and Territories, as given above, are in square miles, as follows:

Ala.....710	Geo.....495	Md.....2,350	N. H.....300	S. C.....400
Ariz.....100	Idaho.....510	Mass.....275	N. J.....360	Tenn.....300
Ark.....905	Ill.....650	Mich.....1,485	N. Mex.....120	Texas.....3,490
Cal.....2,380	Ind.....440	Minn.....4,160	N. Y.....1,550	Vt.....2,780
Col.....280	In. Ter.....600	Miss.....470	N. C.....3,670	Vt.....430
Conn.....145	Iowa.....550	Mo.....680	Ohio.....300	Va.....2,325
Dak.....1,400	Kans.....380	Mont.....770	Oreg.....1,450	W. T.....2,300
Del.....90	Ky.....400	Neb.....670	Penn.....230	W. Va.....135
Fla.....4,440	La.....3,800	Nev.....960	R. I.....165	Wis.....1,590
	Maine.....3,145			
				Total.....55,600 square miles.

This last table is interesting. It shows for example that Maryland with a total area of only 12,210 square miles, includes 2,350 square miles, or nearly 20 per cent of water surface, leaving but 9,860 sq. ms. of land surface. Arizona, with 113,020 sq. ms. of surface, has barely 100 miles of water surface; and Colorado has but 280 miles of water in 103,925, leaving 103,645 of land. Minnesota, which abounds in beautiful lakes, has 4,160 square miles of water surface, of which 3,800 are in lakes and ponds, and 360 in rivers and smaller streams.—In this it is only approached by Florida, which has 2,250 in lakes and ponds, 390 in rivers and streams, and 1,800 in coast gulfs and bays. Of water surface in interior lakes and ponds, Utah has 2,700 square miles; Maine 2,300; Louisiana 1,700; California 1,600; Michigan 1,225; Wisconsin 1,170; Nevada 925; Oregon 920; New York 900; Vermont 380, and so down to Connecticut 40; New Jersey 35; Virginia 25; Colorado 10; South Carolina and New Mexico 5 each.

More Corn Bread Recipes.—"Mrs. A. A. R.," Pana, Ill., thinks that in simplicity and excellence, the following is preferable to any of those given last month.

.... **Corn Batter-Cakes** (for a family of five).—Take 1 quart of buttermilk or sour milk, 1 teacupful of flour, half teaspoonful of soda. Mix well together, and stir in sifted corn meal enough to make a batter. Then, at the last, stir in 2 eggs, and salt to suit the taste. Mix the whole well together; have the griddles hot, and bake the same as buckwheat cakes, and serve while hot....
Corn Bread.—Take the same ingredients as above, except to stir in more corn meal, to make a little stiffer batter; put it in the pan, and bake it about 15 or 20 minutes in a hot oven.

Kentucky Blue Grass.—"J. M. H.," Indiana Co., Pa. "Kentucky Blue Grass" is the same as that known in other localities as "Green Meadow" and "June Grass." Finding in the limestone regions of Kentucky a congenial soil, it there took on such a luxuriant growth that it was for some time regarded as a distinct species. It is sown in September, or in very early spring, even before the snows have disappeared. It may be sown by itself or with an oat crop. It is very essential to keep off the stock for the first year if a valuable pasture is to be established. The seed differs greatly as to quality. In Kentucky, three or four quarts of clean seed is regarded as enough for an acre, but as usually found in the market, six pecks is none too much.

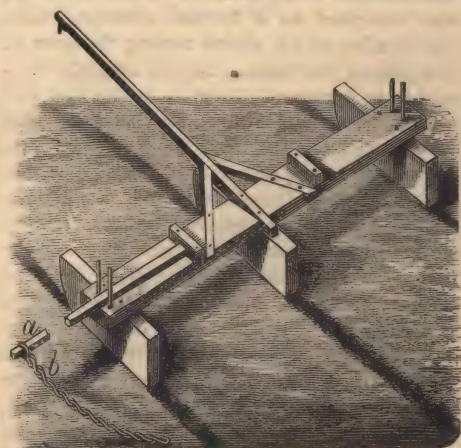
A Garden Marker.—The accompanying engraving shows the construction of an easily made hand marker, for use in the garden. It consists of a light



scantling, with pegs inserted at intervals for making the rows in the garden soil. Two light pieces connect the "head" of the marker with the handle. The size of this marker and the distance between the pegs may vary greatly. This must be decided by the person who may choose to make it; one for making cross-lines in beds will be smaller than one to be used for making long rows, between which a larger hoe or rake are to be used.

The American Agricultural Association.—The second convention of the A. A. A. was held on February 1, 2, and 3, in the hall of the Grand Central Hotel, in New York. The first and second days were given to addresses and papers on various agricultural topics, together with discussions upon the same. The third day was spent in a visit to T. A. Havemeyer's famous "Mountain Side Farm" at Mahwah, N. J. Resolutions were passed by the convention recommending a revision of the tariff by Congress at an early day; also, one favoring the passage of a bill before Congress to provide for a Commissioner of Agriculture in the President's Cabinet. The following officers of the association were elected: President, N. T. Sprague, of Vermont; Secretary, J. H. Reall, of New York; Treasurer, H. McLaren, of New York. The proceedings of the convention will be given in full in the Journal of the Association, published quarterly.

A Corn Marker.—"A Subscriber" sends a sketch of a corn marker, from which the engraving herewith

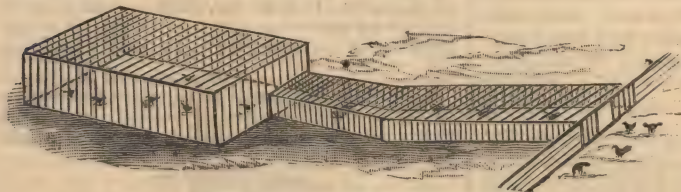


presented is made. Its construction is so simple that very few words of explanation are required. The guide rod (a) is broken, and the end, with its chain (b), brought near the runner, simply to save space in the illustration. The guide rod and chain are easily changed from one end of the marker to the other.

A Chicken "Pasture,"

BY PROF. W. J. BEAL, MICHIGAN AGRICULTURAL COLLEGE.

In the January number, you illustrate a coop for chickens. This reminds me of my plan for "pasturing fowls." As we are situated, fowls are not permitted to run at large. I have a yard surrounded by a high fence in which they are confined. No grass or weeds get a start in such a place. I made a box-coop two feet high, four feet wide and ten feet long, using common pine lath, nailed to stouter pieces. It could be smaller. This is quite light so that any person can draw it from place to place. To prevent fowls flying over, lath strips are nailed across the top. In a word the coop is a box made of lath turned



PROF. BEAL'S CHICKEN PASTURE.

with the open side next to the grass. At one end is a small hole, from which extends a movable runway made of lath. I have several of these runways, some longer, some shorter, so that I can give the fowls a fresh place every day. They can in this way feed over a large part of the lawn surrounding the yard. Several years of experience prove this to be an admirable arrangement for a small number of fowls where it is not desirable to permit them to run at large.

A New Disease Among Dairy Stock.

BY X. A. WILLARD.

Sometime in March, last year, a singular disease broke out among the dairy cows in Lewis County, N. Y., and made its appearance also in adjoining counties. It was described by correspondents in the "Utica Herald" and other papers of the interior, as an excessive scouring or diarrhoea coming on quite suddenly, attacking cows apparently in good health and rapidly prostrating them: and further that it seemed to be contagious, generally attacking animals exposed to it and extending to every member of the herd. It was described as a *terrible scourge*, which was causing much alarm among farmers in this part of the State. As the animals were said to be apparently healthy before this disease made its appearance, and as there was no change from the ordinary feed or water, nor indeed in any treatment of the stock, the causes of this outbreak could not be accounted for. It suddenly appeared on farms widely separated from each other and where there had been no communication with infected herds. A disease of this kind going through the herds had never been seen or heard of by dairy farmers in the section referred to, and on account of its peculiar character of attack and spread, it was designed as "Winter Cholera." Though several accounts were given in the papers from time to time, concerning the progress of this disease, nothing was said in regard to its treatment.

About the middle of April I purchased from a drove four cows to fill up my herd. All the animals in this drove had been

picked up in Schoharie Co., N. Y., and by easy drives had been brought into Little Falls. The cows I selected were grade Ayrshires and Shorthorn. One of the Ayrshires was thin in flesh and was already in milk; the others were in good thrifty condition and all of them appeared to be in good health. While selecting the animals the seller remarked that when he started his drove, the cow in thin flesh was "in much the best rig" of any of the four; but that she had been taken with severe scouring while on the road, and before he could find a stopping place and get help she had fallen away rapidly, and at one time he thought he should lose her. On treating her however, after a recipe obtained from an old drover (which he had often found useful in such cases) she had recovered at once, and had since been gaining in flesh every day. He attributed the excessive scouring to change of water and feed on the road, and as I rather hesitated about taking her, he said he would "warrant her

all right," and besides give me the recipe which perhaps would prove useful on some occasion. As the man was well known to me and one I had dealt with before, I accepted his terms. The cows were driven to my farm and placed in stable with the other members of my herd, and I thought no more of the matter until about a week after their arrival, when the cow standing next to the one warranted, was taken suddenly with scouring and diarrhoea. My farmer thought at first the trouble was only a temporary one and left her overnight without treatment. In the morning she looked badly, the discharges being excessive and frequent. I determined at once to try the drover's recipe, which consisted in taking the inner bark of the Iron-wood tree, commonly called "hard-hack," and rolling up a ball of it about eight or nine inches in diameter, or as the drover expressed it, "the size of a man's head," and then steeping the bark in this proportion with 12 quarts of water. The mixture should be reduced by boiling or simmering over the range until reduced to six quarts of liquid; when cold give from one to two quarts, and repeat if the scouring is not checked. We administered the liquid from a strong, long-necked bottle, and in three doses given at intervals of about six hours each, when the trouble was overcome and with no further derangement to health, except that the cow was very weak. During the next few days every animal in my herd, with the exception of this warranted cow, was attacked in a similar way, and I have no doubt the complaint was introduced by the cow from the drove; and in addition, that the disease was the so-called "Winter Cholera," which had appeared in Lewis Co.

No other cases of the kind occurred in the vicinity of my farm. Possibly any astringent bark or medicine would have answered the same purpose as that used, but as this seemed to be effectual, and as the Iron-wood tree is common in most parts of the State, many farmers have a remedy at hand on their own farms, for the treatment of this strange disease. I say *strange* because in all my experience with dairy stock, extending over a period of 30 years, I have never seen

anything like it. Nor have I heard of it appearing in any herds except the cases referred to in Lewis Co., etc. Perhaps the Veterinary Surgeons may explain the causes of this disease, which certainly is a *scourge*, unless promptly treated. After the first case in my herd, the animals, as soon as attacked, were treated to a dose of this medicine, and generally one dose was sufficient to check it; and afterward the animals were not affected in health on account of the trouble.

As this disease will probably make its appearance again during the coming spring, this statement of my experience with it may perhaps be of some service to the dairy readers of the *American Agriculturist*.

Live and Dead Weight of Turkeys

A farmer frequently wants to know the fair price for turkeys alive, when the price is fixed by the butcher, or by the middleman, who buys for the large city market. New York takes turkeys simply bled and picked. The New England markets, with better taste, want the crop and entrails out. The average loss in dressing will be about one-fifteenth for the New York market, and about one-tenth for the Eastern markets, a little more for small immature birds, and a little less for large well fattened turkeys. An old gobbler weighing 31½ lbs. alive, after loss of blood and feathers, weighed 29½ lbs., or about one-fifteenth; when ready for roasting, 28½ pounds, a loss of about one-tenth. This bird, at 20 cts. a pound, the price which middlemen have paid for first-class dressed turkeys in Connecticut the present season, would come to \$5.70. Sold by live weight at 18 cts., it would come to \$5.63. This would leave only 7 cts. for butchering and dressing, which is below cost. The difference then, between live and dead weight in turkeys raised for the Eastern market, is not over 2 cts. a pound. Lively middlemen ask a deduction of 3 or 4 cents. The farmer may as well know that the difference in value is only two cents, and claim it.—CONNECTICUT.

An Improved Screw-Driver.

Mr. Wm. Jackson, Madison Co., Ill., has improved his screw-driver by cutting an "eye" in the blade in which a lever can be inserted. By this means much additional



AN IMPROVED SCREW-DRIVER.

power can be applied, and old fast screws can be readily started. The engraving shows the form and position of the "eye."—We would add that screws which have been long in place and have become fast by the formation of rust, are very often difficult to start, even the device here given would be of little help. It is customary to apply olive oil to such screws to loosen the rust. The use of kerosene will be found much more efficacious. Kerosene is of such a penetrating character that it will enter where ordinary oil cannot go, and it softens the rust quite as well as ordinary oil.

A Large Sale of Seeds.—While we were in a seed store a few days ago one order came from a house in a western city for 2,000 lbs. of one kind of cabbage seed, and 1,000 lbs. of another variety, the whole amounting to about \$7,000. At the same time peas were ordered to the amount of over \$1,000.



THE GUERNSEY BULL "GYPSY BOY OF WOODLAWN."

Guernsey Cattle—"Gypsy Boy of Woodlawn."

Our readers are aware that there are two breeds of Channel Island cattle, the Guernseys and the Jerseys. The former differ from the Jerseys, which are more widely known in this country, and often called Alderney, in being rather larger and better beef animals.

There has been a feeling widely prevalent that milk and beef were antagonistic qualities—that a good milch cow would necessarily make poor beef. Facts do not sustain this notion. Shorthorns are often great milkers, and such cows, when dry, fatten well. The Dutch cattle fatten well also, and so do the Devons, and yet both, especially the former, are famous for milk. The Guernseys have been bred for milk and butter, and at the same time for beef points. The yellow color in the skin and in the butter has also been cultivated, so that it is exhibited in an extraordinary degree. The cows average fully one-fourth and possibly one-third heavier than the Jerseys, and give on an average a proportionately larger quantity of milk. After they have been longer tested, no doubt

there will be found many cows which will compete closely with the famous Jerseys now so well known as great milkers and butter cows.

Persons who have attended the cattle shows and fairs of northeastern Connecticut, the State Fair of that State, and of the New England Agricultural Society for the last two or three years, can hardly fail to have taken note of Col. Warner's noble Guernsey bull, whose portrait we give herewith. He has, we believe, won *first* in every ring in which he has been shown since he was a yearling, and has taken several sweepstakes prizes besides. So remarkable has been his career as a prize winner that his list of triumphs is one to gladden a breeder's heart.

"Gypsy Boy of Woodlawn" is of a rich yellow color, flecked with white, with pale muzzle, having a massive frame well filled out as to beef, and at the same time with admirably marked milk points. He has a broad and high escutcheon, a coat like velvet, and a hide mellow and pliable, soft and elastic to the touch. This, especially where the hair is white, shows that intense yellow "yolk" valued by Guernsey breeders, and is seen notably within the ears. His short-curved waxy horns

are also stained with yellow. It is no wonder that with so many most attractive points he has taken the Judges, as it were, by storm.

Col. Warner's herd is on his fine farm in Windham Co., Connecticut, a number of his milch cows being among the most famous Guernseys in the country.

How Much Land for Each?

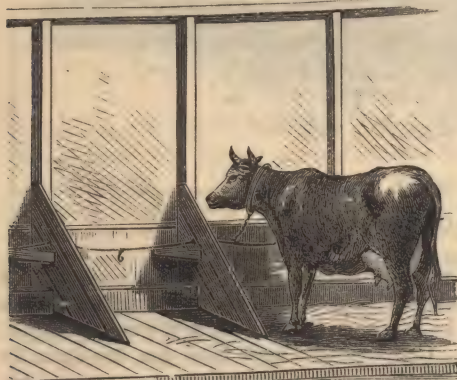
The recent Census gives the total area of the United States (not reckoning Alaska) at 3,025,600 square miles, of which 55,600 square miles are occupied by water—lakes, rivers, bays, etc.,—leaving 2,970,000 square miles of land, or 1,900,800,000 acres.—The total population (see February *American Agriculturist*, p. 146) is 50,155,783. This land, evenly divided, would give to every man, woman, and child 37 $\frac{1}{4}$ acres, and an onion patch 3 by 9 rods, over. If we divide the population into families of six persons, each family could be allotted 227 acres. Allowing one quarter of the land to be mountain ridges, sandy and stony tracts, and other "bad lands," there would still be left the regulation "quarter section" (160 acres) for each family.—But

the census figures now being made up are for June 1880. Since then over one million people from foreign lands "have come to stay," as American citizens, and the natural increase has been considerable; the total increase from 1870 to 1880 was 3 per cent per annum. So we have now (March 1, 1882) nearly fifty-four million inhabitants. As the area of land does not expand, there are now less than 36 acres each, or not 220 acres per family, and the average amount is rapidly decreasing.—No cause for alarm, however. With the best culture, one acre will supply plenty of food for one person, and at this rate we can allow more than four hundred million acres for waste land, and still have an acre each left for the estimated entire population of the globe, which is somewhat over fourteen hundred millions. This is a great country! Thanks for the iron sinews of the hundred thousand miles of railway lines, and the nerves of the network of telegraph wires, and the speaking tubes of the postal department, we are, as a people, brought into one closely united family occupying UNCLE SAM'S GREAT FARM.

Another Cattle Tie.

PROF. E. M. SHELTON, KANSAS AGRICULTURAL COLLEGE.

Judging from the numerous stanchions, and arrangements for fastening cattle in stalls, illustrated from time to time in the public prints, the perfect cattle-fastening has not yet been invented. Nor do I claim perfection for the arrangement given in the accompanying engraving, but it will be difficult to devise a cheaper one, and I doubt if any better or more satisfactory one is in use. I have employed this tie in the college barn



PROF. SHELTON'S CATTLE TIE.

for over four years, and although before this I had stanchions and various expensive ties by chains and staples, I would not exchange this for any other. The fastening consists of a $\frac{3}{4}$ -inch rope, which is run through the partitions of the stalls, one long rope being used for the tier of stalls, although short pieces may be employed if desired. This rope is knotted on either side of each partition, and a good swivel snap for use with a rope, is tied in the rope in front of the center of each stall. The rope should pass over, very nearly, the front of the manger—from the side of the cattle—and for cattle of ordinary height, it ought to be about two feet from the floor. When put in, the rope should be drawn up tightly, as it will soon acquire considerable and sufficient slack from the constant strain from the animals. With this arrangement each cow must be provided with a strap or rope about the neck, the rope or strap

being supplied with a free moving iron ring. When the animal is put in the stalls the snap is fastened in the ring, and if the snap is a good one—none but the best swivel snaps should be used—an animal will rarely get free from it. This fastening, it will be noticed, admits of considerable fore and aft motion, and but slight lateral movement. The cost of this arrangement it is difficult to state accurately, it is so small. The rope for each stall will cost less than five cents; the snaps will cost just ten cents when bought by the dozen, and the time of putting these fittings in each stall is less than fifteen minutes. The rope will wear two years at least.

Experiments with Milk.

DR. E. H. JENKINS, CONN. EXPERIMENT STATION.

Some years since Prof. Fleischmann made a series of very careful observations and experiments on the setting of milk, which contains some valuable hints. They were planned to test the merits of the Swartz (deep setting and low temperature) and Holstein (shallow setting with medium temperature) systems. By the Swartz method milk is set in vessels 16 to 18 inches deep, which hold about 16 lbs., and is cooled with ice water to 35°–40° Fahrenheit. By the Holstein method the milk is set in shallow pans, so that it is not more than 2 inches deep, and is cooled from 54°–59° Fahrenheit. The results of a single series of very carefully made trials are here given:—

	Per cent of fat in the milk.	The per cent of total fat in the milk which was skimmed in the cream after 12 hrs. 24 hrs. 36 hrs.
Deep set, morning milk.....	3.26	75.2 86.6 87.4
Shallow set, morning milk.....	3.26	81.6 85.3 91.4
Deep set, evening milk.....	3.05	82.8 92.0 92.1
Shallow set, evening milk.....	3.05	86.8 85.5 90.1
Deep set, morning milk.....	3.44	89.8 91.6 92.6
Shallow set, morning milk.....	3.44	77.7 88.8 89.4
Deep set, evening milk.....	3.04	82.2 87.7 88.6
Shallow set, evening milk.....	3.04	74.4 90.1 92.8
Average—Deep set.....		82.5 89.5 90.2
Shallow set.....		80.1 87.4 90.9

The average depth of the deep set milk was 16 inches, and the average temperature when skimmed 40°. The average depth of the shallow set milk was 2 inches, and the temperature when skimmed 57°.

The deep setting gave about 2 per cent more fat after 12 and after 24 hours; in 36 hours the shallow setting gave a very little more than the deep. These results, with others, show that it did not pay to let deep set milk stand more than 24 hours. Shallow set milk should stand, if possible, 36 hours.

The much vexed question which suggests itself here—What is the best temperature for raising cream?—is not quite fairly put. In setting milk we do not have a constant temperature. From the time the milk leaves the udder, its temperature sinks more or less rapidly from hour to hour to a minimum, and only after reaching that does it remain tolerably constant. The question rather is: Does rapid or slow cooling give the larger yield of fat within a reasonable time? Results show quite conclusively that rapid cooling is preferable. The quicker it cools, the sooner will currents in the milk to and from the surface be checked, and the fat globules be left to move freely to the surface. If, however, the cooling is carried very near the freezing point, the milk serum becomes thicker in consistence, and almost prevents the globules from rising. This effect we see in the results above. The deep set milk

reached its minimum, 8° degrees above freezing, in 24 hours; and in the next 12 hours only $\frac{7}{10}$ per cent of fat arose, while in the other case where the minimum temperature was 25° above freezing, $3\frac{1}{2}$ per cent of fat rose in the same time.

There is one danger to which deep set milk is exposed in a greater degree than shallow set, and to the causes of this trouble Fleischmann devoted considerable study. It sometimes happens that milk, normal in appearance and with the normal content of fat, separates its cream very slowly and incompletely—more slowly when deep than when shallow set. This temporary disturbance has been often observed, and since it occurs most frequently in autumn, many believe that in general the milk of cows near the end of lactation has this quality. A trial with three cows old in milk, and three newly calved, seemed to indicate that if this trouble is more frequent with cows old in milk, it is not by any means confined to them. In the Raden dairy, where Fleischmann worked, the butter produced by the herd began to fall off rapidly in the second week in October, a time when many cows were towards the end of lactation, and the change was being made from summer to winter feed. It did not come up to the previous yield until December. The same thing happened again in the following spring. On May 5th the decline began, and to make 1 lb. of butter were used:

On May 20.....38 lbs.	On May 24.....33.6 lbs.
On May 21.....42.6 lbs.	On May 25.....25.0 lbs.
On May 22.....40.9 lbs.	On May 26.....23.0 lbs.
On May 23.....35.3 lbs.	

The herd had been stall fed until the 24th, when they went to pasture, and in this herd of 128 apparently healthy cows, the yield of butter increased 85 per cent within 6 days! At this time the majority of the cattle were 4 or 5 months in milk. Evidently the incomplete separation of cream in the fall and spring had no close connection with the changing phases of lactation. Neither was there any disturbance in the management of the dairy. The milk had all the time been treated uniformly. Nor was this remarkable falling off a result of poorer feeding. On the contrary, the ration had been improved by substituting red clover for straw, and the yield of milk had increased at the time when the yield of butter sank so remarkably.

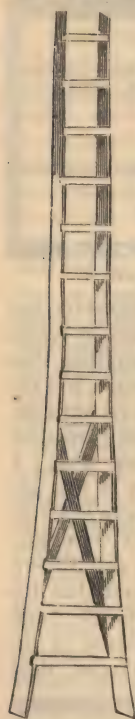
It remained then to consider whether there was anything in the keeping of the cattle which might explain the cause of the trouble. In October of the previous year the decrease in the yield of butter began just as the animals were put on to their winter feed. The microscope showed that the fat globules were not separate, as in normal milk, but cohered in little bunches which, of course, would rise slower than the separate globules. The herd received, in their ration, chaff from grain which had rusted badly, and dust from this settled in the milk and presumably was the disturbing cause. As spring came on, litter had to be economized, and in spite of all pains the stable became more and more unclean, and the milk was affected by it. In the morning, milking had to be done before cleaning out the manure, and though it was strained there and at the dairy, it was not as clean as the night's milk, and gave less butter, quart for quart. While this matter of the tardy rising of cream requires further study, the author offers these suggestions with regard to it. We know what a delicate index of a cow's health the milk

secretion is, and that the energy of the milk gland suffers whenever any error is made in the feeding or care of the animal. We have reason to believe that the varying energy of the action of the gland may impart varying properties to the milk. A slight derangement in the animal may not change the relative amount of the different proximate elements of the milk—ash, casein, sugar, etc.—that is, an analysis would show nothing abnormal, yet the qualities or properties of those elements may be seriously affected, e. g., the casein may be more or less perfectly dissolved, the fat globules may cohere in numbers, etc. We cannot get good milk unless the function of the milk gland is entirely undisturbed, and degeneration of the tissue goes on to its last stages without check.

Very probably the quality of milk suffers whenever the food or drink disturbs digestion, or its taste is not pleasant, or the general care of the animal is defective. That an animal cannot feel well, and cannot produce normal milk when for days and weeks it has no dry bed, or when its flanks are covered with a crust of manure, needs no proof. The author is inclined to attribute the tardy and incomplete rise of cream to an abnormal and unhealthy state of the animals, produced by errors in feeding or care.

Bracing a Ladder.

Mr. W. D. Morton, Lapeer Co., Mich., writes:

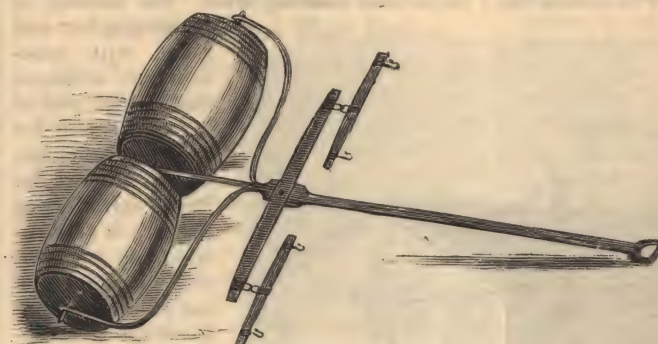


farm one or more ladders long enough to easily reach the tops of the highest buildings.

A Barrel Roller.

Mr. G. W. Stonecypher, Dawson Co., Neb., sends a sketch of his home-made roller, which he describes as follows:—The roller is made of two coal-oil barrels, filled with soil or sand to give them weight. An iron shaft passes lengthwise through the center of each barrel, upon which they revolve. Two bent bars of iron connect the ends of this shaft with the tongue. Another bar, forked at one end, connects the middle of the shaft with the tongue. The hoops of the barrels should

be nailed on; the earth in the barrels needs to be kept moist by occasionally adding a little water. A single barrel may be arranged in much the same way. Such a roller can be used as a "marker" by fitting circular pieces



A BARREL ROLLER.

to the ends of the barrel, or wherever it is desired that the lines be made, placing projecting hoops the proper distance apart.

Lime and Limestone.

We gave our views of the uses of Lime and Limestone in February of last year. So many new readers however have seen the claims made by those who are interested in advocating the use of ground Limestone as a fertilizer, and have forwarded inquiries, that it becomes proper to say something at this time. In the first place, limestone, marble, calc-spar, chalk (of rare occurrence in this country), marl, and oyster, and other shells; are all essentially the same in composition, however they may differ in texture, form, and other particulars. They are all different forms of the Carbonate of Lime; that is, they consist of the alkaline earth, lime, in combination with carbonic acid, and in the case of shells, with animal matter. As a general thing, we only know carbonic acid as a gas. It has a very weak hold of the lime, for if we drop a fragment of limestone into strong vinegar, the acetic acid of the vinegar will unite with the lime (forming Acetate of Lime), while the carbonic acid, being set free, will be seen to pass off in small bubbles. In this case we free the lime from its carbonic acid, by presenting to it a stronger acid, that of vinegar. But if instead of using another acid to displace the carbonic acid, we place limestone, in any of its forms, in a strong fire, the carbonic acid will be driven off by the heat, and there will be left, simply Lime. This is called Quick Lime, or Caustic Lime, and by chemists Oxide of the metal Calcium, or Calcium Oxide. Lime, then, is limestone without its carbonic acid. All the forms of limestone are very little soluble in water; lime itself is more soluble, though but slightly so, requiring at ordinary temperatures about 700 times its own weight of water, yet it gives a marked alkaline taste to water in which it is dissolved. Lime in this condition, as Quick Lime, or when combined with water, "slaked" as it is called, is much employed in agriculture. A small portion of lime is required by plants, but the chief use of lime, when applied to the soil, is to bring the vegetable matters contained in the soil into a condition in which they can be used as plant food. This application of lime as a fertilizer has long been followed by farmers, and in many cases with the most beneficial results. Within a year or so, great claims have been made for ground Limestone, especially by the

makers of mills for grinding it; some of these have asserted that it was superior to burned lime, and superior to nearly all other fertilizers. The question which most interests farmers is, has limestone, however fine it may be, any value as a fertilizer? To this the answer would be both yes and no. Upon a heavy clay soil the carbonate of lime, or limestone in any form, appears to have a beneficial effect; it makes such soils friable and open, so that water and air may penetrate them. While its action upon the vegetable matter in the soil is far less prompt and energetic than that of quick lime, yet its

presence, affording a base with which any acid that may be present in the soil may unite is often beneficial. To extol ground Limestone as "the great fertilizer of the age," to even claim that it is equal to lime itself, is a mistake. Both have their uses. It should be borne in mind by inquirers about the value of ground limestone, that many soils already contain more lime in this form than can ever be utilized, and need no addition.

Early Spring Chicks.

BY D. Z. EVANS, JR.

In breeding poultry, no matter whether they are the high-priced thorough-bred stock or not, the main idea with all is usually one of profit, and the proper way to commence as well as carry it out, is to try to make a fair profit, even if all the surplus stock is sold in the open market at ordinary fowl-meat prices, and not at the usual advanced prices obtained for fine, pure-bred stock. Where this is done, there is rarely, if ever, any reasonable cause for dissatisfaction. Where a person has the conveniences, there is no way in which as much profit can be made from poultry as breeding extra early spring chicks, those which are ready to market with early Asparagus, and weigh from two to four pounds per pair or more. There is always a large demand for these young "broilers," and at prices which are not merely entirely satisfactory to the breeder, but astonishing to those who are new to the business. As they are marketed when about three months old, they have cost but little for food, and pay double and treble the profit they would if kept until fall and then sold in the market at a dollar apiece, which price is much above the average. Aside from this, the loss from accidents and sickness, which is no inconsiderable item, between the ages of three months and eight or nine months, is avoided.

A special house or room is to be devoted to the use of the young chicks, and must be artificially heated, the temperature being kept comfortably warm. The utmost care and attention should be paid to cleanliness, while the feeding must be regular and frequent. The setting hens do not require a warm room, but the young chicks do, as soon as ready to be taken from under the hen. The floor of the house should be kept covered with fine, dry sand, and the heat in the house may come from a coal stove, which maintains a more equable heat and is less dangerous than a wood fire. The best food for the

young chicks, at first, is stale bread crumbs, moistened (not wet) in fresh, sweet milk. No water should be given until the birds are at least two or three weeks old. Until the chicks become fully feathered, but little corn meal should be fed, and that well cooked, the

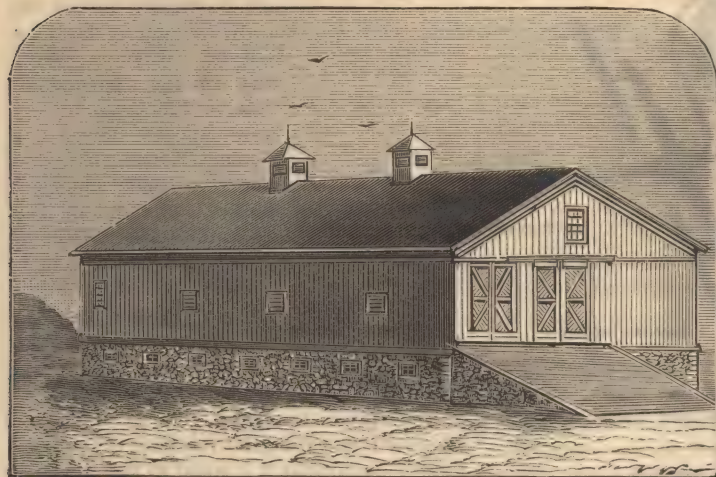


Fig. 1.—FRONT ELEVATION OF THE BARN.

main dependence being placed on stale bread and fresh milk, "Cottage Cheese," cracked wheat, rice, oaten grits, etc., which are most excellent, and not so heating as corn meal.

New Jersey, is "somewhat" of a State, though making little noise in the world—perhaps because wedged in between the great Empire and Keystone States, with the two greatest cities of the country, New York and Philadelphia, close upon its borders to divert attention. In area it covers five and one-third million acres (8,320 square miles). It stands exactly in the middle as to population, there being 18 States having one million inhabitants and upwards, and 18 States with less than nine hundred thousand, New Jersey having 906,096, or 108 to each square mile—about $5\frac{1}{2}$ acres to each inhabitant.—The assessment of taxable property just completed amounts to \$527,451,222, an increase of $9\frac{1}{2}$ million dollars during the year. The real property exceeds one billion dollars, as the

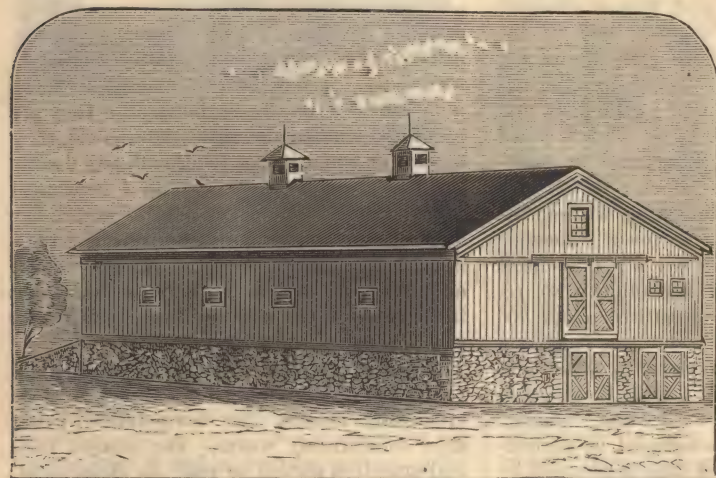


Fig. 2.—REAR ELEVATION OF THE BARN.

assessed valuation in some counties is scarcely 25 per cent, and in few exceeds 50 per cent. This amounts to an average of over \$1,100 for every man, woman, and child in the State. There are 21 counties, the wealthiest, Essex, assessed for \$108,494,000, and the poorest, Cape May Co., for only \$3,525,625.

A Grain and Stock Barn.

In the accompanying engravings we present the barn recently erected by Prof. S. Johnson at the State Agricultural College Farm, near Lansing, Mich. The building is

for storing hay and grain, with basement so arranged that a good part of it may be used for keeping live stock. Figure 1 shows the front elevation of the barn in perspective, and the rear end and other side are given in figure 2. With these engravings very little is required to be said as to construction of the barn and general appearance. The plan of the basement is shown in figure 3. In

this there is provision for two rows of cattle stalls. A silo, 15 by 18 feet, for the preserving of grain fodder, occupies one corner. The two small squares, 4 by 4 feet, show the position of ventilators, which also serve as shutters for the descent of hay, straw, etc. The second floor is seen in figure 4, with its drive-way 14 by 80 feet running the whole length near the center of the barn, with a tight floor above with the exception of 16 feet. On one side is a large bay going down to the basement floor. The granary, 13 by 22 feet, and 10 feet high, occupies one end of the wheat mow; it is ceiled with matched oak. The mow is 13 by 58 feet to the top of the granary, where it extends the whole 80 feet, or length of the barn. There are also two feet on the mow side of the barn of the same size as those in the bay. The position of the stairway to the basement is shown at one end of the bay, and by the side of the drive-way near the entrance doors.

Professor Johnson, in his notes accompanying the architect's plans says: "The drive-

floor runs the long way of the barn, to give room for the machine and straw-carrier inside when threshing. The grain will be stored in the mow and above the drive-floor on the south end. In threshing, the straw-carrier will convey the straw to the floor over the north end of drive-floor, from which it will be distributed to the bay so as to keep all straw inside. The mow will then be

clear to receive corn, straw, and other forage crops. The cost of the barn, with two coats of paint, will be about eighteen hundred dollars."

Watering House Plants.—There is but one time for watering plants, that is—when they need it. If the soil in a pot is

already moist, do not give it more water. If the earth is very dry and packed hard, plunge the pot in a pail of water and let it soak.

Fodder Rations and Feeding Values.

BY DR. M. MILES, DIRECTOR OF EXPERIMENTS AT "HOUGHTON FARM," N. Y.

What is the relative value of corn meal, linseed-cake meal, and cotton-seed-cake meal as cattle food? The answer to this question involves a consideration of the principles that are applied in determining the value of all foods, and the relative influence of their constituents in the varied processes of animal nutrition. Twenty-five years ago we were told that the nitrogen of foods was the measure of their nutritive value, and tables of food equivalents on this basis were published. According to this method cotton-seed cake would have a higher value than linseed cake and the latter would be decidedly better than corn meal. In this plan of determining the relative value of foods it was assumed that their nitrogenous constituents were the only substances that could aid in the process of nutrition, and they were therefore called "flesh formers," while the non-nitrogenous constituents, which were supposed to serve as fuel to keep up the animal heat, were called "combustive," or "heat-producing" elements.

This theory was for a long time a popular one, as it seemed to give a very simple ex-

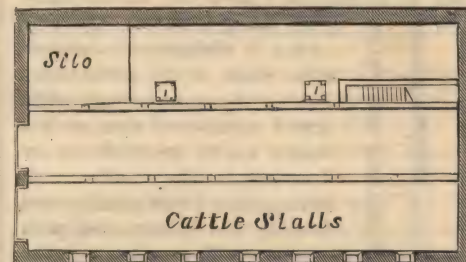


Fig. 3.—PLAN OF THE BASEMENT.

planation of the physiology of digestion and of the economy and relative value of foods. It was, however, a mere assumption that failed to stand the test of experience, and the carefully conducted experiments on animals, that were made by physiologists, furnished abundant proofs that it was not true. A simple illustration of the failure of this old theory to account for observed facts is given. In the feeding experiments that were conducted at Rothamsted, by Lawes and Gilbert, on an extended scale, it was found that the comparative value of ordinary cattle foods depended more upon the proportion of digestible non-nitrogenous substances than

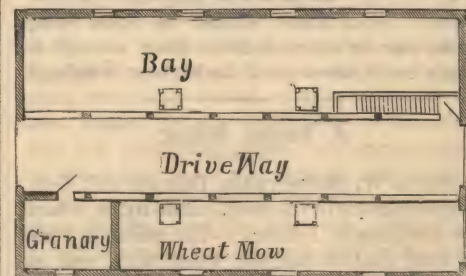


Fig. 4.—PLAN OF MAIN FLOOR.

upon their richness in nitrogen. From these experiments and from other special physiological investigations we now know that the non-nitrogenous constituents of foods have important parts to perform in the strictly

nutritive processes, and that they are not "burnt," as in a furnace to keep up the animal temperature. In fact there is no evidence that anything like a combustive oxydization of the fluids or tissues takes place in any part of the system. The oxygen taken in by the lungs in the process of respiration, must now be looked upon as a nutritive element, or in other words as food that is essential to the healthy activity of all the tissues of the body. In connection with other nutritive materials, finding their way to the blood through the digestive organs, it is stored up and takes part in the formation of the organs of the body and aids in the performance of their several functions. The carbonic acid, that is exhaled as an excretory substance by the lungs, is not formed directly by a simple union of oxygen and carbon, as was formerly supposed, but is one of the products of disintegration, or splitting apart, as it were, of the tissues which are constantly undergoing the process of decomposition and repair, that is characteristic of all living tissues. In the taking in of oxygen, by the lungs, and the exhalation of carbonic acid, we therefore see but the beginning and the end of a long series of changes and transformations of organic materials that constitute the entire activities of the system.

The fallacies of the "combustive theory" of respiration have undoubtedly been obstacles to the proper understanding of nutritive processes, and the relative value of the constituents of foods. Foods are composed of proteids, or albuminoids, carbohydrates, fats, and inorganic or mineral matters. The proteids, or albuminoids, as they are often called, are substances that resemble albumen in composition, as various forms of albumen, casein, fibrin, legumin, etc., and they all contain nitrogen. The proteids therefore constitute the nitrogenous group of nutrients. The carbohydrates are the substances that resemble starch in composition, as cellulose or woody fibre, starch, sugar of various forms, of gums, etc. As the carbohydrates and fats contain no nitrogen, they are often called the non-nitrogenous group. The part taken by each of these nutritive elements, cannot, in the present state of our knowledge, be fully traced, but they all seem necessary to form what may be called a perfect food. The proteids are essential in the construction or building up processes of all tissues. Every cell of the animal body, whether of muscle, or nerve, or fat, or of secreting glands to prepare the various digestive fluids, or of the excretory glands that throw off the waste products of the various organs, must have a supply of proteids, or it cannot perform the functions required as a part of living tissue. Even fat itself may be formed from the proteids, and it seems probable that the butter globules, or fat of the milk, is largely, and perhaps almost entirely formed by a transformation of proteid materials. Voit, from experiments with dogs, reached the conclusion that all fat was formed at the expense of proteids, even in cattle and swine, but Lawes and Gilbert, in their extended and accurate feeding experiments have proved that at least 40 and in all probability more than 50 per cent of the fat laid up by pigs on a good fattening diet, must have been formed from carbohydrates. An animal can live for some time on an exclusive diet of proteids, as they seem to have the power of taking upon themselves the parts more economically

performed by the carbohydrates and fats, in addition to their own peculiar functions.

[The discussion of this important subject may be resumed another month.—Eds.]

Silk Worms and Their Food.

The *Morus multicaulis* craze of about fifty years ago so disgusted people with everything related to silk raising, that whatever progress had been made before that time went for nothing. Within a few years there has been a renewal of interest in silk culture, which, if allowed to develop in a healthy manner, will lead to good results. As indications of this revival, we note: The Special Report of Prof. C. V. Riley, Entomologist to the Département of Agriculture, published in 1879; and the formation of a Society in Philadelphia for the promotion of Silk Culture. Before this reaches our readers, this Society will have held an exhibition, and awarded premiums for the best lots of cocoons raised by women in Pennsylvania, and by colored women in any State. This Society touches the key-note of the success of silk culture in this country, and the same is advocated by Prof. Riley in the Report just referred to, *i. e.*, that silk culture must be a family industry; the care and feeding of the worms must be done by the women and children, and by others whose old age or feeble condition do not allow of active labor.

Silk culture can not be carried on by companies with hired labor, but to gain a permanent foothold and be profitable, it must be accepted as a part of the farm work, just as are the care of poultry or bees, the making of butter and cheese, or in some localities the production of maple sugar. Carried on in this manner, the required labor will not be taken from any other industry of the farm, as it may be done by those unfitted for hard work, and while the annual income in each case may not be very large, it may be an important addition to the family purse, and in the aggregate add largely to the prosperity of the community. That a renewed interest is now felt in Silk Culture is shown by the inquiries that come to us as to where the eggs of the silk-worm may be procured. These letters often indicate that the writer has not considered the more important question of the food supply for the worms that are to be hatched from the eggs. We shall gladly encourage a healthy development of this industry, and are sure that the best service we can at present render to those who are desirous of undertaking silk culture, is to direct their attention to the matter of food for the worms. This must of course precede everything else.

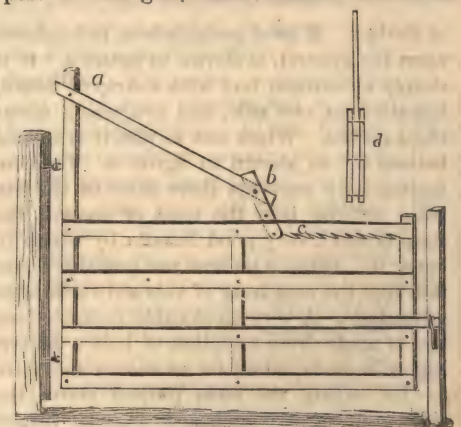
The true silk-worm can prosper only upon the leaves of some kind of Mulberry; it does fairly well on the leaves of the related Osage Orange, and the worms, when very young, may be kept alive on Lettuce leaves, still the Mulberry is the best food. Upon many places there are old Mulberry trees, left as a memento of the *Moro-mania*, as the multi-caulis speculation has been called. Where such trees exist they will afford a supply of food for a beginning, and to raise a stock of worms to lay eggs for future operations; but the labor of collecting leaves from old trees is too great to be profitable. Where there are already established hedges of the Osage Orange, the raising of silk-worms may be undertaken, as with proper care success will follow. But if a food supply is to be provided,

let it be some form of the White Mulberry (*Morus alba*). The French writers enumerate twelve varieties of the White Mulberry, and several of *Morus multicaulis*, but this last is by the best authorities regarded as a variety of the White Mulberry, and so is the *Moretti*, another kind valued as food for silk-worms. The Mulberry is grown from the seed, from cuttings, and by layers, etc.

We need consider only the first two methods. Our dealers in tree seeds offer the seeds of the common White Mulberry, the *Multi-caulis*, and the *Moretti*, the last two varieties coming sufficiently true from seeds. The seeds may be sown like those of ordinary garden vegetables, in good soil in early spring in drills 18 inches apart, and when large enough, the young plants thinned to three inches and kept free from weeds. They are usually left in the seed-bed for two years, mulching the ground heavily at the approach of winter; after which they are set in the plantation. Where cuttings can be procured, this is the best method of raising the trees. Shoots of the previous year's growth are made into cuttings about 6 inches long, making the cut just below a bud; these may be set in the fall, or early spring, putting them 3 or 4 inches apart in the row, leaving but one bud above ground; the rows should be far enough apart to work with the cultivator. The next year the young trees may be set where they are to grow. Whether seedlings or rooted cuttings are planted, they may be set out in hedge rows, or a piece of ground be given up to the plantation. In either case they should be 6 to 10 feet apart, and are to be kept low, in order to allow of the easy gathering of the leaves. The main stem may be but a foot or so high, or 6 feet high, as circumstances require. When the trunks are of the last-named height, the trees are treated as described for Pollard Willows, in an article on page 110.

A "Sagging Bar" for Gate.

Mr. J. Meyer, La Salle Co., Ill., sends a sketch and description of a device for overcoming the sagging of a gate. The hinge-post of the gate-frame extends somewhat



A REMEDY FOR A SAGGING GATE.

above the upper bar of the gate. A board is fastened to the top of this post, *a*, which runs downward to *b*, near the middle of the upper cross-bar, and then connects with a short double band—one on each side of the long board—which is provided with a bolt fitting into notches, *c*, cut in the under side of the upper bar of the gate. The form of the double-latch piece, with its bolts, and its attachment to the board is shown at *d*.

Feed Boxes.

BY L. D. SNOOK, YATES CO., N. Y.

At the request of several readers of the *American Agriculturist*, I present various forms of feed boxes for cattle, etc. The requests were for boxes that could be easily

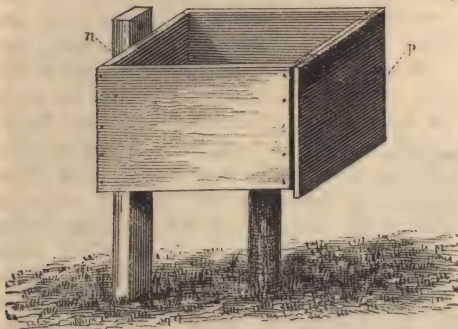


Fig. 1.—COVERED FEED BOX.

cleaned, and I have no doubt but some of the forms here given will prove satisfactory. In figure 1, a box is shown firmly attached to two posts. It has a hinged cover, *p*, that folds over, and may be fastened down by inserting a wooden pin in the top of the post near *n*. The one given in figure 2 may be placed under shelter, along the side of a building or fence. One side of the top is hinged to the fence or building, the bottom resting upon a stake, *e*. When not in use, the box may be folded up, the end of the strap, *b*, hooking over the pin *a*, at the side

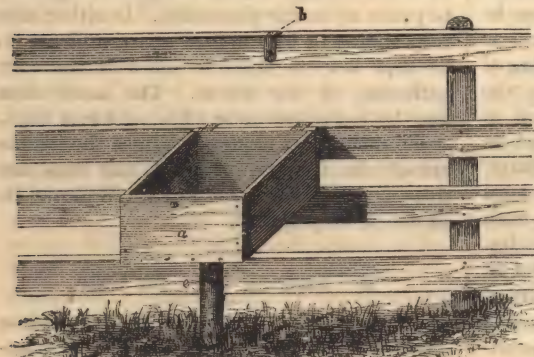


Fig. 2.—HINGED FEED BOX.

of the box. A good portable box, to be placed upon the ground, is shown in figure 3. It is simply a common box with a strip of board, *h*, nailed on one side, and projecting about eight inches. When not in use, it is turned bottom up, as shown in figure 4. The projecting strip prevents three sides of the box from settling into the mud or snow. The strip is also a very good handle by which to carry it. Those who now use portable boxes will find the attaching of this strip a decided advantage. A very serviceable portable feed box is made from a section of half a hollow log, with ends nailed on as shown in figure 5. By letting the ends project above the sides four or five inches, it may be turned

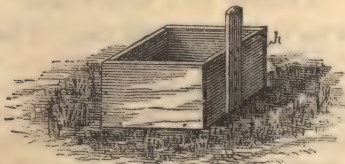


Fig. 3.—PORTABLE FEED BOX.

over when not in use, and easily turned back by grasping the sides without the hand com-

ing in contact with earth or snow. All feed boxes and racks should be placed under shelter during summer, or when not in use.

The Teosinte in Louisiana.

In January 1880 we gave a figure of a then new forage plant, "Teosinte" (*Euchlaena luxurians*), with an account of its success in Australia and other countries. As it was important, should the plant prove valuable in any part of the country, to learn if its seeds could be perfected here, we undertook to test this point. Mr. Wm. H. Carson liberally supplied us with imported seeds, and we sent samples, early in 1881 to several friends in Florida, Louisiana and other Southern States, with the request that the ability of the plant to produce seeds be tested. The only report we have thus far had, is from T. L. Deacon, Esq., Ouachita Co., La. At our suggestion he started some of the seeds quite early in pots, and when the plants were six inches high, they were set out in the open ground.

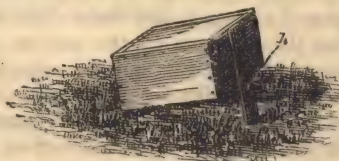


Fig. 4.—FEED BOX INVERTED.

The rest of the seed was sown in drills $2\frac{1}{2}$ feet apart and the seeds 2 feet distant. This seed was long in germinating, but when the plants came up they soon overtook those that were transplanted. The roots are immense, and Mr. D. says that the plants stood the unusual drouth of last summer admirably. The Teosinte gave three good cuttings of fodder and on Dec. 1st was still alive. Several plants were reserved for seed, but as these were unfortunately cut during Mr. D.'s absence, he cannot positively assert that seeds can be ripened with him, but from the appearance of some heads that have grown since Sept. last, he feels very sure that they may be. As to the value of the plant our correspondent says, that we may recommend it to our

friends in the Southern States as a great fodder producer; in a rich soil with a hot sun, it may be cut three times in the season; it

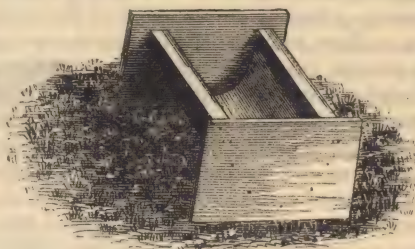


Fig. 5.—BOX FROM HOLLOW LOG.

grows rapidly after cutting, and gives no trouble, save running the cultivator through it a few times. The cattle are very fond of it green or dry. He is so much pleased with the trial that he proposes to have five acres of Teosinte the coming season. We should be glad to learn from our readers how far north the plant can be profitably cultivated.

The Mallard Duck.—The Mallard is the domestic duck in a wild state. It is a marsh duck, and seemingly is never so happy

as when half flying, half wading, through weeds, brakes, and lily-pads. Pond-lily seeds, and the animalcules of the muddy waters, are its best food. The meat of the Mallard, and particularly that of the young, is very delicate, being free from the fishy taste and odor common to almost all salt water ducks. It requires a skillful sportsman to make a successful day in hunting the Mallard, it being so watchful, and making such good use of the instincts for self-preservation given to it by nature. The unskillful gunner may steal upon his prey, and imagine that he is unnoticed, but all the time the Mallard has kept one eye upon him, closely observing every movement of the enemy, and as the latter rises for his shot, it sails gracefully away, giving its shrill note of warning to its companions. One writer has well said: "Let no novice, therefore, think to sprinkle salt on the Mallard's tail, or to bag him without a resort to traps and strategy."

Tim Bunker on Points in Deacon Smith's Farming.

MR. EDITOR:—The Committee of our County Agricultural Society, on visiting farms, went to look over Deacon Smith's farm in September, and try and learn something for their own benefit and that of their neighbors. The Deacon is a sort of model farmer among us, and is said to have the best farm in all Hookertown. He is the only man in town that has a bronze cock turkey got up by a taxidermist and kept in a show case among other birds. As the Deacon was to have a big dinner, and entertain a few of his neighbors, I went along with the Committee just to keep them straight, and to prevent any mistakes the Deacon might make in mis-statements about the yield of his crops, and the merits of his cattle. I don't mean to insinuate that the Deacon is inclined to draw the long bow, or to exaggerate in his statements, one whit; but you see, even Deacons have the infirmities of human nature, and in the excitement of a visit from the Committee, he might give the facts a gloss that better not go into print. You see, if things get printed there's no end to their circulation. The first point the Deacon made was the value of

A Good Barn.

This he considered the stomach of the farm. Into it all the vegetable products of the farm were gathered, pretty much, and after they had fed cattle, the refuse was lodged in the cellar, to be mixed with straw, muck, headlands, and other absorbents, to make fertilizers and furnish food for the crops. This barn, which he had built the present season, was 41 by 60 feet, and was a great improvement on the old style of barn, which was still standing at quite a long distance from the house. He said, "If men considered the time it takes to fodder cattle three times a day, they would always locate the barn near the house to save footsteps. A half hour saved daily is worth at least thirty dollars a year, and that sum is worth looking at by thrifty farmers. My barn stands upon a ten-foot wall, and is supported by stone and wood posts, so arranged that an ox-cart can be driven under all parts of it. It opens to the south upon the yard, and affords comfortable shelter for the cattle whenever I want them out of the stables. This cellar is my manure factory, and into it

all the droppings of the stock, except the fowls, are thrown. Here is work for rainy days, and there need not be an idle time for the farm hands through the whole year. I consider the manure made under cover worth at least a third more than that which is made in the open yard. The saving is quite as great in the spending of all forage crops. Pine boards closely rabbeted are an excellent substitute for hay and provender. The manure rarely freezes in the stables above, and cattle will thrive better on two-thirds of the rations that are required at the stackyard or in an old shaky barn. The saving in fodder and in fertilizers in a few years will pay the whole cost of a barn."

At the south end of the barn was the turkey roost, and this led to inquiries about

The Turkey Crop.

Deacon Smith says: "Only farmers with a good range should undertake to raise this crop. On small farms, with near neighbors, they interfered very much with cultivated crops, and not infrequently lead to neighborhood feuds. But on my farm of 220 acres, and with a range of thirty acres of woodland, largely stocked with oak and chestnut, I consider them one of the most profitable crops I can raise. I hold to breeding from the heaviest stock I can get, and as a rule prefer to use two and three-year-old cocks and hens. I bred two years ago from a two-year-old cock weighing 42 lbs., and the present season from one of his chicks that weighed 30 lbs. when he was ten months old. The best of my hens weighed 24 lbs. I weighed several of my young birds last November, when about six months old, and found young cocks weighing 22 lbs., and hens weighing from 15 to 19 lbs. They had not been fattened, and were not ready for market. I find on reference to my note book, that the turkey crop has paid fairly. I have usually left from eight to eleven hen turkeys for breeders, and have raised from 99 to 137 in a season. In 1868 I sold my turkeys for 27 cents a pound; they amounted to \$380.40. In 1869 I sold for 25 and 27 cents a pound; gross amount of sales \$386.18. That year I kept an account of expenses and calculated the net profit at \$213.58. In 1870 I sold for 25 cents a pound; amount of sales \$311.37. In 1871 I sold for 18 cents a pound; gross amount of sales \$286.13. I would rather raise turkeys and sell at 15 cents a pound than raise pork and sell at ten cents a pound."

Clean Hay and Hay Seed.

Deacon Smith next took us out into one of his meadows. He has about 75 acres in mowing, all remarkable for their clean cultivation. There are no wild cherries, hazel nut bushes, or other shrubs and briars along the walls. It is unbroken sod close to the wall, and no dock, catnip, nettles or daisy are tolerated. Said the Deacon, "when I took charge of the farm my father said to me, 'my father bequeathed to me only four daisies and I give to you only two.' I have gone upon the principle of allowing only one to go to seed, and that is the one that I cannot find. It is comparatively an easy job to keep a clean field, clear of daisies, or white weed, and other foul stuff that damages the hay. As soon as these weeds are fairly in blossom, lose no time in going through the fields and pull every weed by the roots, and carry it to the compost heap. Then if you save your own Timothy seed, and red-top and

clover, you have a clean sod to start with, and foul seed can only come in on the wind, or by the brooks that run through your fields. A little watchfulness at the right time keeps the meadows clean and gives your hay and clover seed a high reputation in the market, which commands the best prices." He next called the attention of the Committee to his

Irrigated Meadows.

A small brook runs through the farm, not half large enough for a mill stream, in most seasons, running through the summer, but occasionally dried up as in the past season. He has utilized this stream by turning the water into irrigating ditches and greatly increasing his hay crop. The ditches for carrying the water are of the simplest kind, no effort having been made to gather up the water of irrigation, and use it a second time, on the lower parts of the field. The same lot of about six acres is thus irrigated by passing it in a single ditch around the upper edge, thus only the higher portion of the field is thoroughly irrigated, except in winter when the ground is frozen and the water is kept on the surface. There is the same arrangement on a seven-acre meadow further down the stream, which receives a larger portion of the water. This is considered the most productive in hay, of any lot upon the farm, and yields at two cuttings—three tons to the acre. These lots keep in good condition without any top-dressing, though this would add very much to their yield and as a matter of course, they would pay better dividends.

Tile Draining

is another of the Deacon's strong points in husbandry. He has about ten acres of once swampy land, too wet for cultivation, underlaid with tile. This was done many years ago, and has made fields, once poor pasture, among the most productive on the farm. It is kept in grass, and yields readily about two tons of hay at one cutting, every year. Deacon Smith has drained nearly all the wet places upon his farm, and is an enthusiastic advocate of underlaying the soil with crockery.

A Reformed Alder Swamp.

In the south part of the farm was an alder swamp. A railroad crosses the upper end of this swamp, and to perfect its drainage it was necessary to cut through it a broad ditch eight feet deep. This so completely took the water off that the swamp has become dry land. It was cleared of roots and rocks, cultivated a few years, and laid down to grass, and now yields two tons of hay to the acre without top-dressing. The area of this lot is about ten acres, and tile have not been used upon it. As an example of the working of deep drains, this lot is worth a good deal to the public. The Deacon has been a diligent reader of the *American Agriculturist* for thirty years, and his farm may be considered a good card for this paper.

Hookstown, Ct., January 15, 1882. } Yours to command,
TIMOTHY BUNKER, Esq.

Cold Frames.—The novice in the management of cold frames, is more likely to meet with difficulties in the month of March than at any other time. During steady cold weather it is but little trouble to keep the plants properly dormant, but in March we are apt to have violent alternations and spring-like days may be suddenly succeeded by a cold as severe as any of the preceding

winter. One should always keep in mind that the object of the cold frame is to keep plants from growing as well as to preserve them from severe freezing. In many localities the weather will allow the cabbage plants to be set out during the latter part of this month, and in these the plants should be prepared by hardening them, which is done by removing the sashes altogether when the temperature is no lower than 30°, and when below this, they are to be opened more or less. Even when the temperature is as low as 10°, some air must be given, by slightly tilting or shoving down sashes at the upper end. Should there be a considerable fall of snow, at this season, it will be well to remove it from the sashes, lest the plants become too warm, and start into an unhealthy growth. It is safe at this time to be prepared for sudden cold after a succession of mild days. In such cases, shutters, straw mats, marsh hay, or other litter, or even old carpets, should be in readiness to place over the sashes and protect the plants from sudden freezing.

Gates with Wooden Hinges.

A subscriber in Tasmania sends us sketches

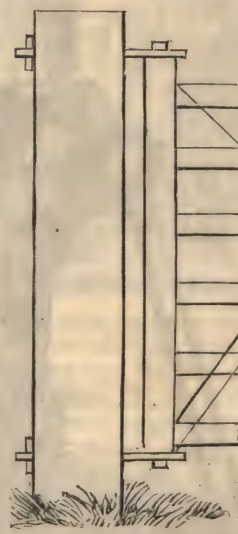


Fig. 1.—GATE POST WITH WOODEN HINGES.

and following description of a handy gate with wooden hinges: "Bore a large auger hole through the gate-post, both above and below; make the sockets of tough wood dressed to drive through the auger hole, and put in a pin on the other side. The sockets for the gate are, of course, bored, and the ends of the gate head rounded to fit, with a shoulder. This plan is superior to a socket which usually holds

the water and soon rots."—The arrangement of the parts described is shown in figure 1; the socket seen from above is given in figure 2." The same correspondent says:—"I have constructed a gate, full sized gateway, say 10 feet, intended to be merely temporary, but afterwards properly hung, and still as good as ever, four years' old and continually in use. It was made of pieces of an old roof, rafters and battens, and did not take more than half an hour to put it together. The rafters, for heads, here checked out the width and thickness of the battens with a saw, the checkers knocked out with a chisel, the battens inserted in their proper places, and a batten nailed over the head. The nails were clenched, and the whole gate simply braced. The size of rafters was 2 by 3, and the battens 1 by 3 inches." A single head is shown in figure 3. Our subscribers in Tasmania and Australia are quite numerous and we hope others will give our readers the benefit of their experience.

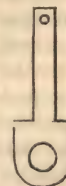


Fig. 2.



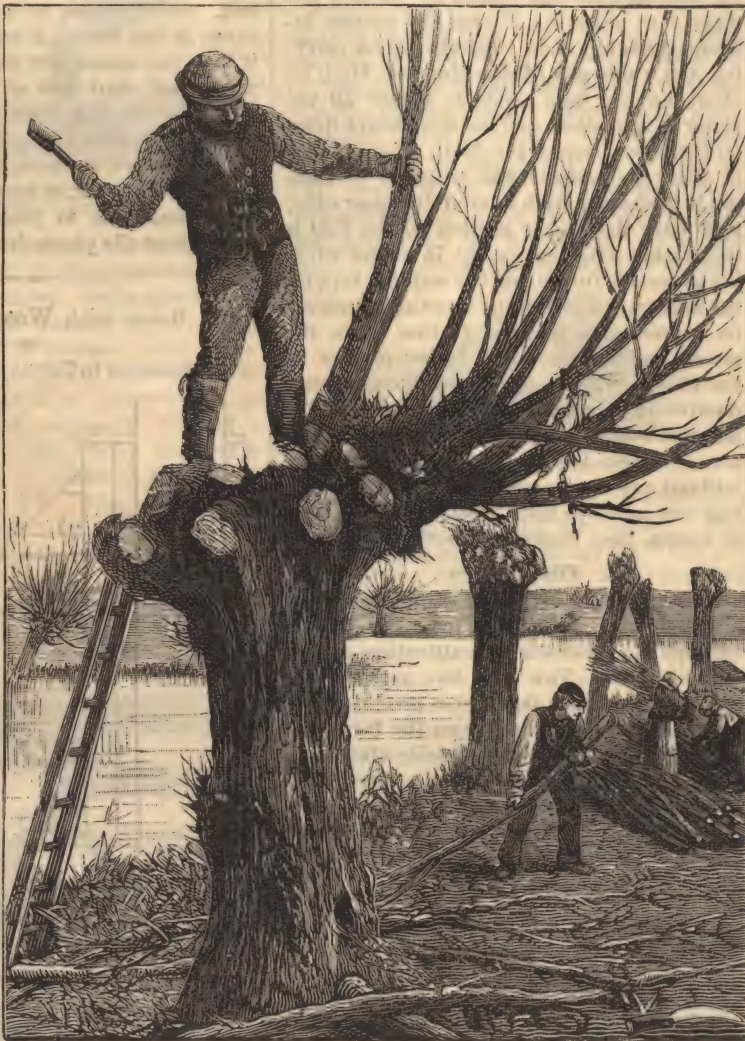
Fig. 3.

Some Uses of Willows.

An American, travelling in England, is struck by the frequent occurrence in the landscape, of the Pollard Willows, the low rounded heads of which, in some localities mark the water courses for long distances. Willows thus treated; for the Pollard is not, as sometimes supposed, a distinct kind of willow, may be occasionally seen in some of our older States, but less frequently than formerly. The White Willow excitement of some twenty years ago, was unfortunate, as many farmers, finding that the tree did not bear out the extravagant claims of speculators, became so disgusted with it that they overlooked its real merits. While the White Willow hedge will not be, as claimed, "the universal fence," the White, and other willows may be made most useful especially to those who live in prairie regions. The question frequently comes from the West and elsewhere, as to the best method of preventing streams from encroaching upon their banks. Lining the banks with a row of willows is a very ancient practice, and probably there is no better method. Their roots, especially in wet ground, form dense masses of fine fibres well suited to retain the soil in place. The ease

with which such a barrier is established is greatly in its favor. Cuttings of almost any size readily take root; these may be a foot or two long, and as thick as one's finger, or they may be large enough for fence posts, according to the readiness with which they can be procured. While the roots are useful in preserving the bank, the tops may be turned to good account to afford fuel or poles for various purposes upon the farm. Another use for willows is as a wind-break, to shelter the house and farm buildings, as well as to protect orchards and young forest trees from the prevailing winds. When planted for this purpose, as well as along the streams, the tops are made most useful by occasional pollarding. In growing willows for basket-making, the stem reaches barely above the ground, and the shoots are cut every year. With pollards, the trunks grow 6 to 8 feet high, and the stems are cut once in three or five years, according to the use to be made of

them. This treatment of the willow very likely had its origin in the fact that the wood of an old trunk is poor and of little value, while that of a young branch is vastly superior, and will serve many useful purposes. The pollard is started, either by setting a willow stake of the height desired for the trunk, or by planting small cuttings, and when the trees from these have grown tall enough, to cut them square off. The nearer they are planted the straighter the shoots will grow. The engraving shows the manner of cutting; every branch is



POLLARDING, OR CUTTING THE YOUNG GROWTH FROM OLD WILLOWS.

removed close to the trunk. The following spring an abundant growth will start from dormant or "adventitious" buds. Some of the trunks of very old pollard willows are picturesque objects. They are often decayed in the center, and it is not rare for seeds of other plants, carried there by birds, to germinate and grow in the decayed wood. Sometimes roots have started from the willow branches themselves, and made their way down through the hollow trunk to the ground. The shoots of pollards make fairly durable rails, when nailed to posts; and they answer as sides for ladders, and a great number of other uses on the farm. The kind of willow most readily obtained in this country is the White Willow, and its variety the Golden, or Yellow Willow. The Sallow, or Goat Willow (*Salix Caprea*), is kept in some nurseries and is preferable, on account of the greater hardness of its wood, for poles or for fuel. In England other trees are pollarded, especially

the Ash and the Wych Elm, in order to raise poles, while in Italy the Mulberry is so treated for the convenience in gathering its leaves for feeding silk worms, while the trunks are used as supports to which to train grape vines.

Cut-Worms and other Insects in Georgia.

BY DR. A. OEMLER, WILMINGTON ISLAND, GA.

Very many gardeners and farmers, without any knowledge of the habits and metamorphoses of insects, were congratulating themselves that, following our last very severe winter, they would suffer less than usual in the spring and summer from predatory insects. Contrary to such expectations, however, we suffered more severely than I can remember in an experience of twenty-six years, the insects having been retained in their dormant, hibernating state during the entire winter by the severe cold, until when they came forth at the opening of spring they found favorable weather and a plentiful supply of food for their sustenance.

The common Cricket was early, very injurious to strawberry plants and fruit, and, in one field especially, they were troublesome to my young cabbage plants. The Mole Cricket (*Gryllotalpa*), cut off the seed leaves of young watermelon plants so persistently that I was compelled to plant ten acres of my crop over five times. In August the Grass-worm of the South (*Laphygma frugiperda*), came on some farms in such countless numbers as not only to devour every blade of grass, but to destroy large plantings of cabbage, one man losing every plant from eight pounds of seed. Still later, Grasshoppers appeared so abundantly that, between the two and the voracious Cut-worm, our winter crop of cabbage for the northern markets was materially shortened, notwithstanding many truck farmers secured a partial supply of plants from the North. I have been located on the extreme end of this island for the past sixteen years, and during that time I have never, to my recollection, noticed the presence of a Cut-worm without stirring him up and preventing the advent of his probable progeny. On a field upon which a thick growth of Cow Peas had been plowed under about a month previous, I undertook, early in November, to plant out cabbages, when I found Cut-worms had taken possession in such numbers that I was compelled to desist until I could get rid of them. In an area of twenty-two square yards, I caught, one morning, under ten turnip leaves placed on two adjacent rows, 294 Cut-worms, and 58 of all sizes under one single leaf about a foot long. My son caught 15 at the root of a small cabbage plant. Prof. Riley having requested some to be forwarded to Washington, I send out a negro lad some days afterward, and he brought me from the same field over 250, which proved to be nearly every one the larvæ of *Agrotis suffusa*. Finding them too numerous to be hunted, I placed turnip leaves poisoned with Paris Green upon the field, and left them quietly to make way with themselves, which they did with such perfect success that a week afterwards I had a great stand of plants. They have been very abundant everywhere in this section. In my experience with Cut-worms I have found prevention better than cure, I seek either to deter the moths from laying the eggs of the future worm, where I expect

to put out valuable plants, by having the land entirely bare of vegetation at the laying season, or, if already in the soil, I remove them before putting out the plants. As a bare fallow is injurious to fertility in this climate, I prefer to mulch the ground thickly with pine straw or dry marsh sedge, which is burned off in preference to plowing it under on my light sandy soil. Such insects as Crickets harboring under the mulch will be destroyed by the heat. If in the rotation a clean crop, which is not subject in the fall to Cut-worms, precedes the one to be put out, little fear of injury need be entertained. Two years ago, intending to put out about an acre of Extra Early Dwarf Erfurt Cauliflower plants, the seed of which sells in New York at \$9 per ounce, I mulched the land early in the fall with marsh sedge. As with the cabbage field above mentioned, a very heavy crop of Cow Peas had been plowed under. I lost only about a dozen plants, and these near the borders. Four years ago, being anxious to secure a good stand of Watermelons on about one-quarter acre, from which I expected to save some choice seed, I placed cabbage leaves and bunches of grass on every other row, as soon as the hills were made, and hunted the worm every morning. Before the seed was up I captured 1,538 Cut-worms and only a single one afterwards. There were worms enough to average eleven to the hill, and my melons would have stood a poor chance, had they remained, as a single worm could have cleaned off several hills.

The Globe Sunflower.

Not long ago there appeared in the European catalogues *Helianthus globosus fistulosus*, and it is now offered by our seedsmen. Two names are all that any plant ought to have, and the first two of these may be translated into "Globe Sunflower," which is short and descriptive. What *fistulosus* (hollow) applies to we are not quite sure, but probably to the quilled form of the florets. At all events, the engraving shows it to be a sunflower that is



THE GLOBE SUNFLOWER.

trying to look as much unlike a sunflower as possible. We are not told anything about its origin, but as it is an annual it is likely to be a variety of the common sunflower, *Helianthus annuus*, in which the disk is filled with ray flowers, and the very convex receptacle gives the head a form approaching the globu-

lar. It is said to grow about three feet high, and to bloom profusely. Where an abundance of yellow is desired to mix with and warm up other and more sombre colors, this will no doubt afford ready means of providing it.

Drummond's Phlox and Its Varieties.

Most of our choice florists' flowers have come to us through many generations of cultivators, and at the hands of each have been improved, and more and more removed from the original form. We can now hardly conceive that the finest Carnations started from a not very attractive single Pink, or that our choice Pansies, with their wonderful richness and variety of color and great size, could have been derived from the poor little *Viola tricolor*. It has required the care of gardeners through several centuries to bring some of our flowers to their present perfection, but in the Drummond's Phlox the improvement is comparatively recent. The change from the original form, with its rose-colored flowers, to a great variety with colors and markings so different as to warrant giving them distinctive names has been begun, and has gone on within the memory of many now living. No

contrast among flowers can be greater than that between the original Drummond's Phlox and some of its recent varieties. Those who, like the writer, have seen this plant on its native soil in Texas, know that in early spring it covers broad stretches of prairie with a pleasing uniform rose color. The seeds were sent to England in 1835, and for a number of years they produced flowers of that color only. If we examine the catalogues of the present day, we find that the seeds of some 40 named varieties are offered, and hardly a year passes without the introduction of one or more well marked new kinds. We now have in this one plant a wide range of colors, from pure white to dark crimson, or to deep and brilliant scarlet, with all intermediate tints; there are also several shades of yellow, but the nearest approach to blue, is a slate-colored variety. Not only are there many brilliant and pleasing self-colors, but the number with variegated flowers is now large. There are dark flowers with light "eyes" and centers, and light ones with dark centers. Of late, varieties have appeared with centers so large that the body color is reduced to the dimensions of a mere border around the outer edge. The engraving gives, so far as may be done in black and white, the contrasts presented by some of the newer varieties. The flower at the left-hand, with the large white center, has a border of very deep maroon, while that at the right-hand has a border of lively carmine. The lightest flower low down and near the center is pure white with a yellow eye, from which purple spots shade off into the white. Of course, these many varieties could not have been produced had not this plant a

marked tendency to vary, or "break," as the florists term it. There is a great difference in plants in this respect; some have been in cultivation for centuries and still remain the same. Others, after a several years of cultivation will depart somewhat from the original, and by sowing seed from these, a wider variation may be secured, and thus by a series of selections, without any hybridizing or crossing, numerous varieties are secured and made permanent by careful cultivation. As to Drummond's Phlox, or *Phlox Drummondii*,



A CLUSTER OF NEW VARIETIES OF DRUMMOND'S PHLOX.

the varieties generally come true from seed, and as the plant remains in bloom a remarkably long time for an annual, it is possible, by the use of the different varieties of this one species alone, to produce brilliant bedding effects. Indeed, there is no other way by which those who do not care to expend much upon flowers, can make such a brilliant show as by planting separate beds upon the lawn with varieties of Drummond's Phlox.

The Albert Workingmen's Garden.

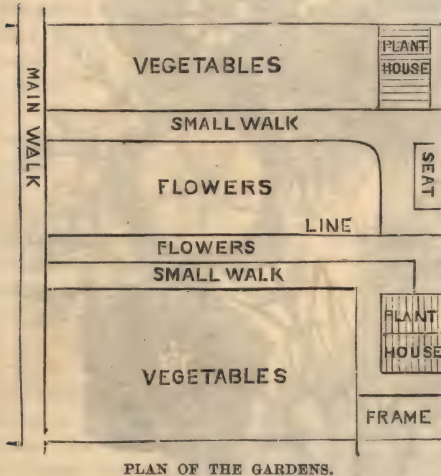
BY ELIAS A. LONG, BUFFALO, N. Y.

During a recent visit to Europe, I had an opportunity for making a hasty call at the Garden bearing the above name, in Glasgow, Scotland. The Garden is owned by a Mr. Dickson, a large manufacturer who employs many men. About five acres of ordinary good land, lying not far from his works, are embraced in the Garden, and this area is divided into nearly 200 plats with walks, which make all parts accessible. These plats differ in size, but average about four square rods each. These are let out to the different workmen employed in Mr. Dickson's establishment who devote them to the cultivation of various vegetables and flowers.

All the work is done after the regular day's work is over, and although the Garden was almost wholly deserted when I visited it near mid-day, it was said that the place presents an extremely busy and cheerful scene, during summer evenings, when the workmen have come there with their families, to work and enjoy the pleasures of the Garden. Many of the plats have pleasant seats or Climber-

covered arbors at the rear end. I was surprised at the attention the cultivation of flowers received, and I think that fully one-fourth of the space was given to these. Perhaps two-thirds of the entire number of plats have either small artificially heated plant houses, or else frames, for bringing along plants, and for growing specimen pot plants. The accompanying sketch shows how some of these plats were laid out by the occupants. It is seen that a path leads from the main walk back through each plat, generally extending to the conservatory, seat, or frames.

The prices at which these plats may be had by the workmen average about two dollars in our money per plat per annum. By this it will be seen that Mr. Dickson derives quite an income directly from the arrangement,



in addition to the greatly increased value of the services of his men, who are thus employed and refreshed by useful pastime. The gain must be very large, to have several hundred workmen thus utilizing their spare time, instead of worse than wasting it as well as their money in the drinking and gaming places. Judging from the excellent condition of everything, the quantity of produce taken from the five acres every year must in the aggregate be something marvellous.

One thing that tends to perfection in the gardening, is the spirit of friendly rivalry that exists, largely as a result of the offering by Mr. Dickson of a series of prizes every year for the first, second, and third best showings of different kinds of fruits, flowers, and vegetables. While scores of beautiful flower borders, all over the Garden, testify to the love and ability of these workmen and their families, for rearing flowers, some of the prize borders were as fine as anything in the same line to be met with anywhere. The establishment of such Workingmen's Gardens throughout America, in conjunction with large factories and workshops, would surely lead to much good to all parties interested.

Remedy for the Maggot of the Cabbage Fly.—Mr. H. M. Cowles, Hartford Co., Ct., writes: "I see by an article in the Dec. number of the *American Agriculturist* that Bisulphide of Carbon is recommended for the Cabbage Fly. How is it applied?"—The use of Bisulphide of Carbon is not only to be recommended for the cabbage-maggot, but also for the squash-borer, and other subterranean insects. It would serve admirably to destroy ants when we can find their hills. To apply the liquid, we have only to make a small hole, by use of a cane or

other small rod, close beside the plant to a depth of two or three inches, then pour into the hole a half teaspoonful of the fluid, and quickly cover the same by filling the hole with earth, and pressing it down with the foot. The same operation in the middle of an ant-hill will quickly destroy the ants if they are in the galleries of the hill. All should remember that Bisulphide of Carbon and also its vapor, are very inflammable, and should always be used with great care.

Trees Injured by Vines.

Vines, which climb by tendrils, like the Virginia Creeper, or by rootlets, like the Trumpet Creeper, may be allowed to run upon trees without materially injuring them. Those which climb by twining should never be allowed upon trees, as they may check the growth and do permanent injury. One of the most destructive vines of this kind is the Climbing Bitter-sweet, or Wax-work (*Celastrus scandens*), a beautiful climber, which is often seen holding forest trees in its fatal embrace. Prof. W. A. Buckhout, of the State College, Centre Co., Pa., sends us the following account of the injury inflicted upon an ornamental tree through the agency of this vine. He writes:—"On our College grounds we have a fine Norway spruce, from which about ten feet of top have been cut off by our Climbing Bitter-sweet. This vine having secured a foothold directly beneath the tree, and protected by its wide-spreading branches, grew half concealed among them, until it reached two-thirds of the distance to the top. Here it put all its strength into one long naked stem which quickly threw two or three close coils about the tree. Then springing back among the branches it twisted about there a little only to dart in at the very top, round which it ran in a close spiral, ending in a cluster of leafy branches thrown out in every direction, and luxuriating there after the manner of twiners generally when they have reached the top of their support. The spruce thus bore a light green crown—not its own. With advancing growth the coils of the Bitter-sweet began to tighten about the tree. They did not break or give, but gradually became embedded, first in the bark, then in the wood, the wood bulging most over the upper edge of the track of the vine, and thickening sensibly there, while just below the track the diameter remained about the same. A copious exudation of resin showed plainly the spiral track of the ligature. When the vine was sunken about an inch at one point, the top of the tree became top-heavy, and in a gale of wind it was broken off and fell to the ground. The cut shows the section of the base of the broken top. Bear in mind that this fractured end was cut from the part which broke away from the tree, and not



INJURY BY CLIMBER.

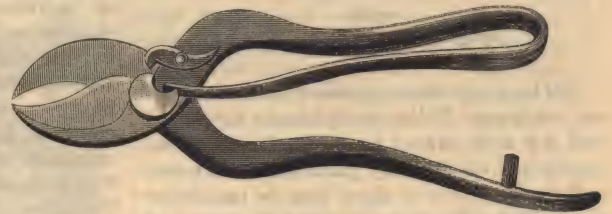
from the other, although it does present the singular anomaly of a greater diameter above than at the point of breaking. But this is only in accordance with the laws of growth which produce a more marked enlargement above a constriction than below it.

The injury seemed irreparable, but the strongest limb just below the fracture was bent up as near to the perpendicular as it would bear without breaking, fastened securely to a pole which was lashed to the stem below; and now, after four years' growth, there is a very good leader, and the tree has so nearly recovered itself, that in a year or two more the old injury will not be noticeable.

It is hardly necessary to say that we lost no time in cutting the *Celastrus* down to the ground, but as it could not be readily reached on account of the thick branches at the base of the spruce, the roots were allowed to remain, and every year it sends up again its exploring branches, and is ready to repeat the operation again if given the opportunity. Twining vines should never be allowed to run upon growing trees, especially upon such as by reason of their kind or position are particularly valuable. The growth of years may be snapped off in a moment, and a tree so disfigured that it will be difficult to restore it.

"Perfection" Pruning Shears.

The fact that year after year new patterns of pruning shears appear at home and abroad, would indicate that the perfect implement



A NEW STYLE OF PRUNING SHEARS.

had not yet been invented. To one who needs to use such shears only occasionally and for but a few minutes at a time, it makes but little difference what the pattern, if they are only sharp and make a clean cut. But if one has to work the whole day, and perhaps several days, he finds that the comfort of working depends largely upon what may seem trifles in the construction of the shears. Aside from good cutting blades, the spring, while it opens them promptly, should not be so strong as to require an unnecessary amount of force to close them. The handles should be large enough to fill the hand comfortably, and be without any edges or sharp angles. The catch to keep the blades closed when not in use is generally near the ends of the handles, and is very often much in the way, and sometimes contrived with so little forethought that it may pinch or wound the hand if the operator is not on his guard. We have inspected a recently imported French implement that appears to have avoided the usual faults. As will be seen by the engraving, the structure is exceedingly simple; the end of one handle is prolonged and turned up to form the spring, thus doing away with a separate spring. The handles are broad and fit the hand well, while the usually troublesome catch, very strong and simple, is up near the pivot where it can do no harm. It would seem hardly possible to go any further in the direction of simplicity.

The Profit from Thinning Peaches.

BY PROF. W. J. BEAL, MICHIGAN AGRICULTURAL COLLEGE.

The Hon. A. S. Dyckman, of South Haven, Mich., is a noted grower of fine peaches. One of the leading points in the management of his orchard is that of liberally thinning the young fruit. In 1877 from one Early Crawford tree, set 17 years, he thinned at one time 8,000 peaches, and at another 2,000, making 10,000 in all, from a tree which finally yielded about 15 baskets of choice fruit. One man would spend a day in thinning four to six trees. The cost of thinning peaches does not exceed five cents a basket for those ripened. He estimates the cost of thinning his peach crop in 1877 at \$500. Peaches were plenty that year, but he received extra prices for fine, large fruit, which had little competition. He has practised thinning for several years, and is assured that the excellent reputation which his fruit enjoys is due to this. In pruning, he removes one-third of the small limbs. He then removes nine-tenths of the young peaches, leaving no two nearer than six inches of each other. He has fewer specimens to handle, but about as many bushels as though he had not thinned. We have similar testimony from J. J. Thomas, E. Moody, President Wilder, and others, as to the utility of thinning apples, pears, etc., as well as peaches. Mr. Geo. Parmelee, of Grand Traverse County, says, that in one year peaches on a thinned tree brought \$2.50 per basket, while the fruit from a neighboring tree of the same variety, but unthinned, brought him only \$1.25 per basket.

It pays to thin fruit when young. It costs less than one would suppose until he tries it. No one who has fairly tried the experiment, and seen the result, will abandon the practice.

The "American Wonder" Pea.

An account of the origin of the "American Wonder" Pea was given in January, last year, and we have from time to time presented our own experience with it in two years' cultivation. We now notice this variety to show how extended trials abroad, as well as at home, have sustained our opinion as to its value. Heretofore, all of our good peas have been of English origin, and it is a matter of no little gratification to us, and of considerable astonishment to Europeans, to find an American pea walk right by their old favorites, and take its place at the head. Messrs. Sutton & Sons, the great seed-growers of Reading, Eng., after a thorough trial, give this pea the highest praise, and in their catalogue for this spring have a half-page engraving showing the appearance of their field of this variety. An equally high estimate is placed upon it by Ernest Benary, the noted seed-grower of Prussia. It is now offered by seedsmen generally. The accompanying engraving is an exact representation of a portion of a row, and from our experience, we are sure that the artist has not used his imagination in depicting its wonderfully prolific character. We look upon the production of this pea as one of the most important steps made, of late, in its department

of horticulture. Green peas are generally esteemed as the most delicious of vegetables; yet every one who has a garden is aware that their production requires a deal of trouble. The work of getting brush and of sticking peas; or of supplying any substitute in the shape of a wire or other trellis, is a rather high price to pay for one or two pickings of peas. The introduction of a good dwarf variety greatly simplifies pea culture. We have had a number of dwarf peas heretofore; these were productive, but not good, or good, but not prolific. In the "American Wonder" we have the very highest excellence combined with abundant yield. On good soil, this variety may be sown in rows 18 inches apart.



THE "AMERICAN WONDER" PEA.

It is early, being ready for the table in 30 to 35 days after sowing. By putting in successive sowings, at intervals of a week or less, a succession can be kept up until the weather becomes too hot for successful culture. Few of our tall peas, save, perhaps, the "Champion of England," in favorable seasons, give more than one full picking and a following poor one, and we cannot expect more from this dwarf. In market gardens it is regarded as a good feature if a variety yield its whole crop at one picking. We do not know that the "American Wonder" has been grown as a market pea, but we have no doubt, considering how near the rows may be, that it will be found profitable. Of all choice vegetables, peas are less frequently found on the farmer's table than any other kind. The work of sticking tall peas comes when the time cannot be afforded, and if the family have green peas more than once or twice they are fortunate. We especially welcome this new variety for the reason that it will allow the farmer, or whoever has the land, to have green peas, of the best quality in abundance, several times a week, as long as the season lasts. Those who do not feel that they can purchase seed for an abundance of peas this season, can buy enough to raise the seed for a full feast of peas next year.

Raising a Crop of Onions.

The price of onions is exceedingly variable, and in each season of high prices many have their attention turned to their cultivation; consequently we have many questions on the subject. The onion crop is not one that can be profitably grown one year and dropped the next. It is usually the case that those who continue the cultivation year after year, are those who in the long run make it profit-

able. It is of little use to try to raise onions, except on highly manured land, and without being able to give the labor required in weeding just at the needed time. Land that has been for two or more years in corn or potatoes, will answer for the crop. It is claimed by experienced growers that newly-turned sod will not raise good onions. The land is preferably manured in the fall, using 20 to 30 loads of coarse stable manure to the acre. Or the land is plowed in the fall, and a ton of fish guano to the acre is harrowed in. The land is again plowed shallow in spring, and 300 lbs. to the acre of Peruvian guano, or its equivalent in other good fertilizer, harrowed in. If the ground has not been manured in

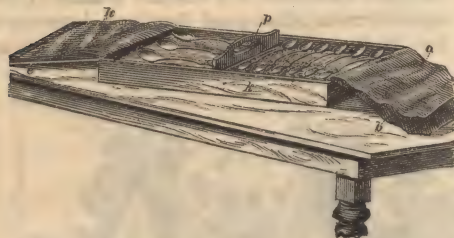
the fall, then fine pig-pen manure or fine stable manure may be used, plowing in very early, using the guano or other fertilizer afterwards. The harrowing should be very thorough, and if the surface is not smooth, use rakes to finish. The sowing should be done as early in spring as the soil is in good condition. The ground is marked out by a marker in lines 14 inches apart, and the seed sown by one of the several seed sowers; the machine should be set to drop about three seeds to the inch, and they need to be covered about half an inch. All experienced onion growers are very particular about their seeds, which should be new and of home growth. The variety will depend upon the demands of the market, but the beginner will do best with one of the Early Red varieties. The cultivation of the crop may be greatly aided by the use of one of the hand weeders or cultivators, of which there are several good ones advertised. If the rows are straight and the sowing regular, a hand cultivator may be run very close to the plants, leaving but few weeds to be taken out of the rows by hand. Usually three or four weedings are needed during the season. Three bushels of salt to the acre, applied when the plants are about four inches high, is beneficial, and at the second weeding it is well to give a good dressing of wood ashes. We would not advise those who have never raised onions to go largely into their cultivation at first, as they require more attention than many can give, and unless the weeds are kept in subjection the onions will suffer. Some varieties mature much earlier than others; the harvesting is commenced whenever the majority of the tops fall over. Many growers prefer to sell the crop directly from the field, while others prefer to hold on in the hope of better prices. If they are kept they should be well cured.

THE HOUSEHOLD.

For other Household Items see "Basket" pages.

A Spoon-Case.

Silverware is an article of table use that is not only expensive, but is easily injured by scratching, tarnishing, etc., and the spoons in particular should receive better care at the hands of the house-keeper than is generally given them. This is easily done by the use of a spoon-case, or holder, similar to the one



A CONVENIENT SPOON-CASE.

shown in the engraving. It is simply a box, k , $2\frac{1}{2}$ inches high, and of a length and width sufficient to place six teaspoons crosswise at one end, and three tablespoons lengthwise at the opposite end. The bottom may be filled half an inch in depth with wheat bran or sawdust, over which is fitted a piece of flannel, and upon this the spoons may be firmly pressed, to make a permanent indentation in the bran and cloth. Pieces of flannel, a , b , and h , are secured with glue or tacks to each end of the case. One of these pieces is spread over the spoons as soon as a course is laid; another is then added and a second piece of flannel placed over it. A hinged cover, e , may be attached to either end. A handle, p , is secured at the center. This is a very simple arrangement, and by the use of different colored flannels, and by the painting or papering of the box, a very neat and attractive receptacle is obtained for an expensive portion of table furniture. L. D. S.

Over-work Among Women.

In about nine cases out of every ten, the woman who is in poor health attributes her sufferings to over-work. Many times this is a valid excuse, but frequently it is not the real cause of the ill-health. Lookers-on cannot always understand the situation, and the comparisons made between one woman's work and another's are often incorrectly drawn. Molly sometimes suffers from over-work, but she avers that no part of the work to be done for her household is really beyond her strength. She says that as regular house maid she could do all of the so-called house-work and the plain sewing which she now does, and maintain her health. But to do these things well would leave no time for the "nothings," and every mother whose heart is in that work knows that it takes a good deal of time. I believe, and here is one more chance to bear witness to this truth, that the mother-work should have the first chance. A woman whose ideals are low can sometimes carry on all of these departments successfully (in her own opinion), and in that case her health is not likely to suffer from too much work. It is the worry, the sense of incompleteness or of falling short in what is required of one, more than all the fatigue of her work, that wears Molly out.

It is well to know how to do every thing in the best way possible, but when a woman finds that she cannot do everything that it seems to be her duty to do in the best manner possible, she had better stop and consider what are the most essential things to be done, and study the easiest ways of getting along without positive neglect. Wholesome food the family must have, but most of the fancy cooking is done in vain as respects health and strength. This same fancy cooking (which includes cake and pie—these being quite unnecessary articles of diet, doing more harm than good in most cases) is one of the chief causes of ill-health among women. Nearly all of these invalids are more or less dyspeptic. I have watched this a good deal among my neighbors in different places. Few of them give the right name to their disease, and I think the doctors are sometimes careful not to tell them the whole truth, but those who make any permanent improvement under medical treatment usually make some change in their habits of diet. One woman told me, during an hour's visit, these two facts, which did not seem to have any connection in her own mind: 1. "I used to be a great sufferer from sick headache, but I seldom have it in late years." 2. "No, I rarely eat a crumb of cake now, no matter how much I make; I haven't cared for it a few years back, though I once was very fond of nice cake." Another, in praising her doctor's success in the treatment of her nerves, after detailing the medicines and the rest and rides prescribed, remarked incidentally that the doctor told her to eat rather lightly of plain, nourishing food, and to give up her tea and coffee if she could. Many years ago I heard a physician of fine education and large experience ridiculing the idea that prevailed among women that their sickness came generally from over-work. "They over-work their jaws," said he, "munching confectionary, and eating all sorts of unwholesome food, and they often eat too much anyhow for persons who exercise so little." At the time I thought this criticism too severe, but I have often since seen cases to whom it applied.

Another way in which women are over-worked by their own fault—a sin of ignorance frequently—is in the use of foolish clothing. We are all more or less in bondage here, for woman's dress is radically wrong. It is a weight and a hindrance everywhere. Clothing devised to suit the needs of the human body would be much more easily made and taken care of, and it would give a woman freer movement, greater ease and comfort about her work and play, and would be an aid to good health rather than, as now, a drag upon her strength. But a genuine reform cannot be made by any one woman, for it awaits the development of public opinion. But cannot we all lend a hand here, and say on all proper occasions, that woman's dress is absurd, and inconvenient, and unhealthful, and that we wish for something better? Most of us can put less work and care upon our trimmings, and none of us need wear a trained skirt, or one that touches the floor. We may all wear loose and warm clothing, and bear the weight upon our shoulders rather than over the hips. Various female weaknesses are supposed to be caused by active labor, by much standing upon the feet, by much climbing of stairs in the pursuit of one's daily industry. They may be

aggravated by these causes after they have been once induced, but I have serious doubts whether these weaknesses are often really attributable to the causes above named. Corsets and heavy skirts are the real offenders. It is usually the case that the same work might have been done—the standing and the climbing—had the muscles of the body, both external and internal, been left free and unweighted by the clothing. How many feathers' weight are added to her burden of toil and worry by a woman's long skirts, as she goes about her work in-doors and out, upstairs and down, around the kitchen fire, or cleaning the floors in an unsuitable dress?

It is not the hardness of the work, or the difficulty of the tasks taken in detail, that tires out the women as a general thing, if we except the family washings, which usually require a good deal of strength. But these tasks crowd upon each other, and become complicated and worrisome when the care of children interferes with them. These are genuine cases of over-work, where the labor is too hard and too steady for the strength of the worker; but care and worry are harder to bear than physical toil, and social burdens do their part to over-tax the vital powers. F. R.

Making the Table Attractive.

In matters of the table, the question how far the eye shall be gratified as well as the palate, must be decided by the circumstances of each house-keeper. We cannot expect the



A LEAF OF THE FERN-LEAVED PARSLEY.

farmer's wife who, with several children to care for, has to provide the three meals a day for her husband and several hired men, to look much after the ornamentation of the table. If she can provide a fairly clean tablecloth, and tolerably bright knives, forks, and spoons, she does well. Indeed, these are the very foundation of all table adornment, for where these are wanting all ornamentation

of dishes is out of place. There is a great deal in the way of doing little things, and one house-keeper will have her table neat and attractive, while that of another, with exactly the same means, will be the reverse. For example, a handful of radishes, thrown higledy-pigledy upon a plate, all heads and points, looks careless. The very same radishes, placed in a tumbler or other glass, with the neatly cut tops all uppermost, make a pleasing ornament for the table. If cold meat is to be served for supper or tea, it makes a wonderful difference whether the remains of the leg of mutton is put on as they were left at dinner, and perhaps in the same dish, or a few thin slices cut off, and neatly laid upon a plate. But these things, it may be said, come under the head of order and neatness, and have nothing to do with garnishing. With many house-keepers order and neatness are all that they can hope to secure, and fortunate is the hard-worked farmer's wife, if she can always welcome her husband after his day's work, to a table adorned by these. There are, however, many among our readers who can go a step in the direction of ornamentation of the table. If there are strawberries for tea—as there should be in every farm house in the season, the farmer's wife may well spend a few minutes in placing strawberry leaves around the edge of the dish, no matter how common the ware. If there are grapes for dessert, a few leaves and tendrils among the clusters give an easily added beauty. A house-keeper who cares to make her table attractive will find it a great help to have a few roots of Parsley in the garden in summer, or in a box of earth in the kitchen window in winter. It is a small matter, to be sure, but the brightness that a few green leaves, contrasted with the white china and white table-cloth, bring to the table, is worth just the little trouble required to secure it. A few leaves of Parsley around any dish of cold meats converts it into an object of beauty. We mention Parsley, because it is the green the most generally used and the most easily provided. The seeds take a long while to come up, but the plants, when established, grow freely in any garden soil. Of late, a variety has been introduced called "Fern-leaved," of which a single leaf is shown in the engraving. This is as easily grown as the common Parsley, but it is so beautifully cut and frilled and fringed, that it is handsome enough to serve as the green to the finest bouquet. A box of it in the kitchen forms a cheerful ornament, and its leaves will be at hand when wanted. Of course Parsley is not the only material that may be used for garnishing dishes. A few slices of beet and carrot, cut crosswise, will set off a dish of sliced corned beef; sliced hard-boiled eggs may be used to ornament a salad, etc.

Household Notes and Queries.

HOME-MADE GRAHAM FLOUR.—Observing the complaint of our "Minnesota House-keeper," of the difficulty in procuring satisfactory Graham flour, "J. H. K.," Bel-fry, Pa., suggests as a remedy that she grind it herself. "A good coffee mill may be bought for from \$3 to \$5, and the grinding of a peck of wheat will be a pleasant exercise. The bran may be sifted out if desired, but if ground fine it is better when not sifted. We formerly had trouble to get good Graham, but the coffee mill solved the difficulty. We

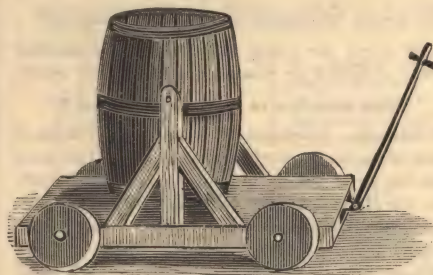
now have the meal fresh at all times, and its purity is assured. It should never be bought or ground in large quantities, as it soon becomes stale and has a bad flavor."

BED-BUGS IN AUSTRALIA.—These insects are apparently found wherever civilized man makes his home. They are well fitted to make long journeys, as they have been known to live more than 10 years without feeding. "C. S." writes from Wellington, South Australia, that on two occasions he has moved into houses badly infested with bugs, and in both cases cleaned them out by the use of a strong hot solution of soft soap. For reaching the bugs behind the skirting a garden watering can was used.—We would suggest as adding to the efficacy of the application, to stir a quantity of benzine or kerosene with the soap before dissolving it.

KEEPING EGGS.—"Mrs. J. H., "Humboldt, Kans., writes that she is very successful in keeping eggs in dry salt. A layer of salt is placed in the bottom of a stone jar, and the eggs are laid in this, the small end down; the spaces are to be filled with salt, and the eggs well covered, then another layer is put in, and so on until the jar is filled. Place the jar in a dry place, and our correspondent says the eggs will keep a year. This is one of the oldest methods of preserving eggs, but it may be new to some house-keepers.

The Disposal of House Slops.

"Improvement" sends from Antigonishe, Nova Scotia, the following, accompanied by a drawing: "You frequently urge, and rightly so, that the premises around the back door of a farm or country house should be kept as clean and neat as those at the front door. To accomplish this is the difficulty. Where no



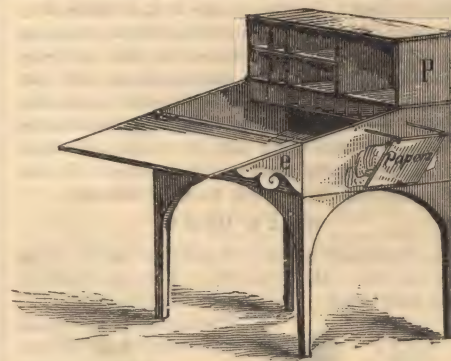
A SLOP BARREL.

provision is made by means of a sink and proper drainage to carry off the waste water of a house, it will always be thrown by servants and others in the most 'convenient' spot, and this is usually about the back door. We can hardly expect girls to carry waste slops any distance on a cold day, particularly to empty them on a manure heap. My plan is to provide a good sized cask mounted on wheels in summer, and on runners in winter, which can be drawn up for use not far from the back door. Into this the slops can be thrown, and when necessary the whole can be drawn to the proper spot and easily emptied, to be returned to its place for future use. The cask should be hung by means of pivots in such a manner that it can be easily upset, and when released will return to a perpendicular position. Placing the pivots slightly above the center of the cask on each side will do this. I append a rough drawing to explain my meaning. It may be used in a garden to carry water about in dry seasons."

A Home-Made Desk.

L. D. SNOOK, YATES COUNTY, N. Y.

Nearly all persons have papers, letters, and other documents, important and otherwise, which they desire to keep and preserve in good condition. They also need a place in



A CONVENIENT WRITING DESK.

some part of the house where letters can be written and other matters jotted down. For this purpose nothing is equal to a good desk, and to be useful it need not be expensive. Any person at all skillful with tools can construct, in two day's time, a desk similar to the one shown in the engraving, and it will answer the purpose quite as well as a desk costing from 10 to 15 dollars. It is shown so plainly that a short description will answer. The lid is 2 feet 8 inches long and 16 inches wide; when open it rests upon supports, e, that are hinged to the front of the desk, and fall inward out of the way when not in use. The width of the desk is 28 in., and 2 feet 8 in. long. The upper portion, at p, may be firmly attached to the body of the desk or left loose as desired; it is one foot high, ten inches wide, with large and small shelves and pigeon-holes. A row of small pigeon-holes is made in the desk, and should be four inches wide, to readily admit an envelope. It is also best to have one or two small drawers, with keys fitted to them, for the better security of important documents. Papers, magazines, and other printed matter may be placed in the open space in the center. A paper holder is also attached to the side, in which place, papers you have unfinished and other reading matter may be kept. The legs of the desk may be rounded or left square. The lid when open is, of course, intended to be used as a place for writing.

Cottage Cheese.—Wherever a cow or cows are kept, the cream is regarded as the important part of the milk, while the skim milk goes to the pigs or the poultry. Of course it is thus utilized and ultimately comes around as food, but it may be better to make a more direct use of it. The skim milk contains a valuable portion of that most nutritious food; in taking the cream, only a part of the nutriment is removed. The skim-milk is allowed to become slightly sour or "clabbered." The pan is then set upon a cool part of the stove to warm gently, or upon the top of a kettle of boiling water. It should get no warmer than the heat of new milk, when the whey will appear clear and separate from the curd. When this separation takes place pour the whole into a bag of thin material, and hang it up to drain. When it ceases to drip, turn the curd from the bag and mix with salt and a little sweet cream.

BOYS & GIRLS' COLUMNS

The Doctor's Talks.

One of my young friends writes: "I saw it stated that at the observatory on top of the White Mountains the wind was blowing at the rate of 50 miles an hour. Did they guess at it, or have they some way of measuring the wind? By the way can you not tell us something about the wind and why it blows?"—Perhaps my correspondent did not think of it, but his question is a timely one, as the "Talk" comes in the most blustering of all months—March, which is quite sure to furnish abundant illustrations of the wind and its doings. To tell you something about wind, we must first ask

What is Wind?

The books give a brief but sufficient answer when they say, it is "air in motion." You will then be quite sure to ask: "What sets the air in motion?"

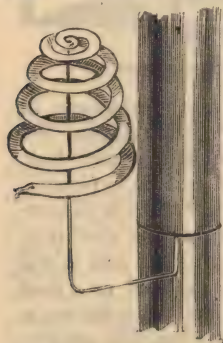


Fig. 1.—HOT-AIR TOY.

The answer to this must be, "the heat of the sun." Before we talk about the air in motion, we must make sure if we know a few facts about air. I suppose it is not necessary to prove to those young people who are old enough to read this, that the air, while we can not see it, is a real substance, as much as a board or a rock. If you tie securely the neck of a partly blown-up bladder, or an India-rubber foot-ball, you can not possibly, by pressing it with your hands, bring the sides of the bladder or ball together. Even if you stand upon it, it will hold your weight. This readily shows that air is a substance; you can have another proof by rapidly moving a common fan or even a shingle. If you move either of these back and forth edge-wise, and then flat-wise, you will find a great difference in the ease of doing so. When you move the flat surface against the air, as in fanning, you find a resistance; there is something, though you can not see what, that prevents a rapid motion in this direction, a real substance. Like most other substances,

Air Expands when Heated,

that is, it takes up more space than it did before. If you place the partly filled ball or bladder near the fire, the air within will be heated, and will expand until it quite fills out the thing that holds it. Warm air being lighter than cold air, rises. You know that in an open fire-place, the warm air is passing up the chimney and carrying the smoke. Tissue paper balloons are filled with hot air, and this being much lighter than cold air, rises, and takes up the balloon. That warm air is always ris-

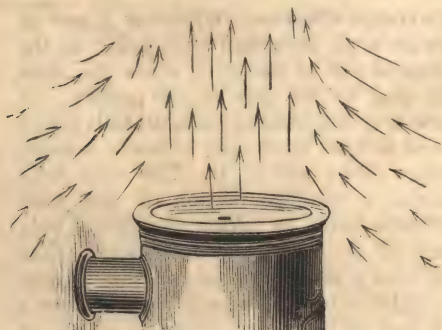


Fig. 2.—SHOWING MOTION OF AIR.

ing from a heated surface may be shown by one of those toys that boys often make. A circle of paper is cut in a spiral form, and placed on a wire as in figure 1. This when placed on the stove will revolve very rapidly, though the upward motion of the air is so slight that it cannot be felt. In a room where there is a fire in a stove, or where even a lamp is burning, there is always a disturbance.

The Air is Constantly in Motion.

It rises, when heated by the stove, and there is also another motion, colder air rushes towards the stove to take its place, as shown in figure 2, where the arrows show the rising of the heated air, and the rushing in of cooler air from all sides. These movements of the air, caused in the room by the heated stove, by a lighted lamp, or other source of heat, so gentle that we do not feel them—currents, we call them, are governed by the same laws as

The More Rapid Movements We Call Wind.

Where air is unequally heated there is motion. Franklin was a great philosopher for his day, and illustrated very important facts by the most simple experiments. He showed that lightning was the same as electricity, by means of a boy's kite and a key, and to show that when two bodies or quantities of air were unequally heated there would be currents between the two, he used simply a candle. You can readily try Franklin's experiment. Open the door a little between a room in which there is a fire, and one where there is no fire, and the air is colder—just a crack will answer. If you hold a candle at the top of the door, the flame will at once be bent and point towards the cold room; if you hold the candle near the floor, the flame will point in the opposite direction, showing that there is a cur-

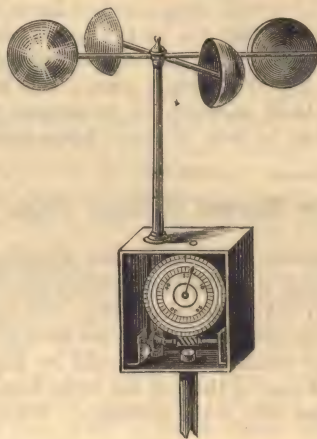


Fig. 3.—AN ANEMOMETER OR WIND MEASURER.

rent of warm air going out above, and another current of colder air coming into the room below.

"What has this to do with the Wind?"

you may ask. It shows in a small way what is taking place on the surface of the earth. The stove heats the air of the room, and there is a disturbance, the air is set in motion, and its currents are passing in various directions. When a portion of the earth is heated by the sun, that heats the air, which rises, and air from cooler parts comes rushing in to take its place—this air comes with greater or less force, and when we can feel it moving, we call it wind. You know that the part of the earth near the equator is the hottest, the heat of the sun falls more directly there than elsewhere. The heated air rises, and air from both the north and the south comes in, and we might expect that there would be a constant wind blowing towards the equator from both directions. But there is something else to be considered; the earth is rapidly revolving, and this changes the direction of these winds, which in some parts of the ocean blow so constantly from the north-east and south-east that they are called "trade winds." There are other winds besides these; wherever there are deserts, or wide plains, these become heated and cause local winds. The islands in the hot portions of the globe have a sea-breeze in the day and a land breeze at night. When the island becomes heated, the air above it rises, and this starts a current towards the island from the sea. As night comes on the island soon cools, and when it becomes cooler than the sea, the wind blows away from the land. Winds are much affected by lakes, mountains, etc., but their origin may be traced to the sun, which heats the earth's surface unequally. There is a great difference in the force of the wind: sometimes so gentle that it barely moves a leaf, again so strong

that we can barely make our way against it, up to the violent tornado which sometimes unroofs and destroys buildings, uproots trees, and often carries men and animals along in its course. The rate at which the wind travels is measured by an

Anemometer, or Wind Measurer.

The name looks hard to remember. You are familiar with the last half of it in thermo-meter, and baro-meter, and probably know that meter means a measure. If you will recollect that *anemos* is the Greek word for wind, I think you will have no trouble with Anemo-meter. There are different kinds of these instruments, but the one most in use is shown in figure 3. It consists of four brass cups arranged upon arms; these are readily turned by the slightest wind, and they move a wheel work which shows how many revolutions the cups make in a given time, and consequently how fast the wind is moving. A gentle breeze moves four and five miles an hour, a brisk wind 20 to 25 miles, and a violent hurricane from 80 to 100 miles an hour.

Another Boy—His Sad Fate.

In the December *American Agriculturist* we gave some account of "Those Two Boys," who came to our office after a hard experience, and who were fortunately restored to their parents. Last autumn another boy of 16, who had got similar sea-going notions into his head from reading the high-colored false stories about life at sea and on ship-board, stole away from home in the same manner. Unfortunately he found a sailing craft just wanting a boy, and he was taken in. The vessel went up to a Maine port, and on Jan. 1, sailed southward. When off Cape Ann, Mass., the vessel was struck by a gale and disabled. The men and boys sprang into a boat, and for three days and nights they were without food or water, wet with rain and sleet, and chilled with cold. When picked up by a chance vessel, two men and our wayward boy were lying in the boat pale in death, and frozen to rigidity. The poor boy delirious with hunger, thirst and cold, had kept asking, "when shall we get to land?" One of the men stripped off his own coat and muffled him in it, but it was of no use. He talked of his parents to the last, sent a fond message to them, and the sleep of death came on. How many similar cases have there been, on the 196 steamships, and the many hundreds of sailing vessels that have succumbed to the ocean's fury during the single year past. Pity indeed, that the watery graves of these deceived and deluded boys, led to flee from home and friends, could not have been filled by those men who, for the money received, write and publish story books and papers for boys filled with the enchanting falsehoods that carry away the imagination of young lads who would otherwise grow up as good men and useful citizens. Boys, don't believe these stories—don't read them—they are sugar-coated poison.

The Death of Aunt Sue.

The announcement in the daily papers that Mrs. Susanna Newbould died at her residence in Brooklyn on Jan. 9th, was read with painful surprise. The last of her frequent notes to us had been as bright and cheery as ever; there was nothing in it to show that Aunt Sue was even ill, and the news of her death came to us as suddenly as it will to you. Aunt Sue has so long provided our young readers with pleasing amusements that they have looked upon her as a friend. Many of you who have written her, know how kind were her replies to your questions, and how even the briefest note seemed to be overflowing with good feeling. One must have been personally acquainted with her to know how bright and witty, and at the same time how loving and lovable she was. Besides being a talented writer, she was a skilled musician and composer of music, and an accomplished artist. Some of her notes show her wonderful readiness at illustration; where a picture would express her idea better than words, a rapid, often highly amusing sketch would tell the story. But with all her

many accomplishments, she will be longest remembered by those who knew her, for her kindness of heart and active sympathy with every good cause.

Paper Ornaments—Easily Made.

The engraving shows a very pretty "Card Receiver," which a little German girl brought to our



CARD RECEIVER.

office, with many other articles made in the same manner. The one above she offered for 25 cents, and we learned that she and her sister (one ten and the other six years old), did a good deal towards supporting the family by making and selling the things at these prices. The Receiver has several colors, tastefully arranged, which can not be shown in the black printing, and it is quite firm and strong. To make it, paper of different colors is cut into strips of uniform width, about three-fourths of an inch wide, in this case, but the width is to be varied according to the article to be made. These strips are then rolled together, loosely or firmly according to the strength and stiffness desired in the article. They are then fastened together with gum or paste, as shown in the engraving, the different colored papers arranged to any one's own taste. The seller of our pattern had a great variety of sizes and forms, round, oblong, star-shaped, etc. Any of our young readers can readily make up a fine assortment of ornamental things, by saving the various bits of paper that come in their way, and cutting and pasting them as here shown.

Our Puzzle Box.

TRANSPOSITIONS.

Alas! you'll often find me
Where liquors dire are sold
The evils I've created
Can never half be told.
Oh! hasten to transpose me,
Then listen to the notes
So musical and happy
From countless little throats.

ADDITIONS AND TRANSPOSITIONS.

(Example: Add a letter to an animal and transpose into a boat. Bear + G = barge.)

1. Add a letter to a vestige and transpose into an article of furniture.
2. Add a letter to an article of clothing and transpose into a person who might wear it.
3. Add a letter to something odd and turn it into something old.
4. Add a letter to a fruit and change it to a flower bred for pickling.
5. Add a letter to a couple and transpose it into one of the months.

CROSS-WORD-SENTENCE.

My first is in the apricot, but never in the plum,
My next is in the finger seen, but never in the thumb,
My third is found in Jersey, but not in New Orleans,
My fourth is found in curtain, but not in veils or screens.
My fifth is in the purling streams, but never in the ocean,
My sixth is found in chemistry, but not in drug or lotion.
My seventh is found in gingerbread, but not in hot-cross buns.
My eighth is in a hundred weight, but not in forty tons.
My ninth is found in Paradise, tho' never seen in Eden.
My tenth in Scandinavia, but never found in Sweden.
My eleventh's seen in winter, but never in December,

My whole is excellent advice, 'twere well we should remember.

WORD BUILDING.

(Add one letter at a time to the original word in each of the following puzzles; sometimes transposing the order of letters.)

Example.—A month, a body of armed men, to wed, one who suffers death for the truth.—May, army, marry, martyr.)

1. Something despicable,—a kind of curtain,—foreign fruit,—a pretty flower.
2. An illuminator,—an herb,—a vehicle,—adjuncts to fires,—odd.
3. To divide,—concise,—a vial,—a clergyman.
4. A unit,—a stick,—a body of water,—boats.
5. An article of clothing,—to melt,—a grain,—anything curled or twisted,—to encounter and sustain.
6. An article of clothing,—an insect,—to join at an angle of 45,—a recluse.
7. An article of clothing,—a boy,—a fruit,—a place of worship,—a garland.
8. A word of blame,—an elf,—a quarrel,—a fay,—to fill with air.

Answers to Puzzles in the January Number.

COMPOUND METAMOREMS. 1. Mix. 2. Zone. 3. Fortunate. 4. My. 5. Boms. 6. Give. 7. Intend. 8. Pink. 9. Honey.

SQUARE WORD.—

L am B,
A lo E,
M ol E,
B ee T.

CROSS-WORD.—

Imper-
tinance.
BIBLICAL NUMERICAL
ENIGMAS.—A good name
is rather to be chosen
than great riches.

PATCHWORK.—1. Yelk. 2. Yoke. 3. Vow. 4. Bistre. 5. Dusk. 6. Lasso. 7. Pound. 8. Crate.

Pr.—Duties fulfilled are always pleasures to the memory. Self-reliance is quite distinct from self-assertion.

FOUNDATION WORD.—1. Ale-rice, tract. 2. Clear-trace-it. 3. Ire-cattle-car. 4. Trace-article.

TRANSITIONS.—1. Boat, bolt, bold, bond, band, land. 2. Dawn, down, sown, soon, noon. 3. Boot, blot, slot, shot, shoe. 4. Rain, fain, fail, foil, fool, foot, soot, slot, slow, snow. 5. Lawn, laws, lass, pass, pats, pate, pale, pall, pill, sill, silk. 6. Pink, pine, pile, pill, poll, pool, fool, foot, boot, blot, slot, sloe, floe, flue, blue.

HAND IN GLOVE.—1. Abate. 2. Caper. 3. Shares. 4. Lowly. 5. Ledger. 6. Crate. 7. Scowl.

ANAGRAMS.—

- | | |
|-----------------|--------------------|
| 1. Maintenance. | 6. Fractured. |
| 2. Bounteous. | 7. Imprisonment. |
| 3. Sleathe. | 8. Distinguished. |
| 4. Eliminate. | 9. Apportionment. |
| 5. Copartner. | 10. Protectionist. |

The Dog and the Crane.

A dog that was much more filled with greed than love, once ate his food so fast that he lodged a bone in his throat and was in great suffering. He did not know how to remove the bone, and feared

when such a fine chance was given. At this the bird clapped its wings and was quickly out of reach of the enraged dog, which would have quickly taken the life of the helpful crane. The dog again forced a bone into his throat, and groaned and lay in great pain upon the earth. The crane again found the dying wretch and came to help him. The dog thought the bird had come to taunt him, and at first would not let it remove the bone. The crane told the dog that it came to help him the same as when called the first time, and would show that its heart was full of mercy. The dog believing that death was near, thought there would be nothing lost by letting the crane come to his aid. The dog was much pleased as well as astonished to find the bone quickly removed, and from that day was a warm friend to the crane.

There are perhaps some human dogs that treat the helpful crane of friendship in much the same way. If this story is not true to the letter, the fable nevertheless has its application.

How to Amuse Your Friends.

"H. T. W.," asks for some amusements for a gathering of young people, which will need no preparation before hand. There are several such; one which all can take part in, and which will cause much fun, is: to hand each one present a scrap of paper, and ask each to draw, with a pencil, from memory, the size of a dime, or 10-cent piece. The circles that will be drawn, their difference among themselves, and the manner in which they are unlike the real coin, is very amusing. Such tricks as these have their uses in educating the eye. Another, quite as surprising in its results, is to pin a piece of paper to the wall, or better to a door, extending from the floor upwards for a foot or more. Now ask each one to mark on this paper with a pencil the probable height of an ordinary hat—one of the stiff kind, called "plug" hat, usually worn by men. The difference between the marks and the real height of a hat, when placed on the floor, will raise a hearty laugh. It is well to ask each one, as the mark is made, to put his or her initials against it. Of course the larger the number who take part in amusements of this kind, the greater will be the merriment. A very funny trick is called

The Lost Key Hole.

An old lady who, on going to market, locked up her house, has come home; she tries to find her key-hole. She does not see it at the usual place, and gradually looks higher and higher, up to the top of the door, and then, having stretched up in the most astonishing manner, she suddenly shortens herself, and drops down and looks for the lost key-hole near the bottom of the door, and in various places. A bright boy can make this very amusing. He must have a woman's skirt, which reaches from his shoulders to his feet. Then an



THE DOG AND THE CRANE.

that it might cause his death. A crane chanced to pass near where the distressed dog was lying, and being asked in plaintive tones to draw the bone from the dog's neck did so at once, by means of his long bill. So soon as the bone was removed and the fear of death was gone, the thankless dog turned to the crane, and said that the long-necked bird might thank him for not biting off its head

old-fashioned bonnet is required, and this should be fastened upon a broom; a large shawl should be pinned to the broom, just below the bonnet, so that when the boy holds the broom, the shawl will drop down over his dress. When the boy holds the broom so that the bonnet will be only as high as his head, he is like a little old woman. As in searching for the key-hole, he becomes taller and



A GROUP OF CHILDREN IN THE MIDST OF THEIR CANDY PULLING.

taller, the effect is extremely funny. When he suddenly shortens the figure by lowering the broom, or when, having lifted it as high as will answer, he suddenly bends over, taking the broom with him, to find the key-hole at the bottom of the door, the effect is so ludicrous that it is always hailed by shouts of laughter. The boy who plays the old woman should always keep a side view towards the company, and never lift the broom so high as to separate the shawl on the broom from his own dress, and thus make known the secret of the trick. This should be rehearsed before showing it to a company, to make sure that the dress is all right. It would be well to let some person keep up a talk in explanation of the old lady's doings.

A Candy Pull.

Spring, in many parts of the United States, brings with it the making of the Maple Sugar, and all the sport which attends this work in the woods. It was my good fortune to be brought up on a farm that had a large number of maple trees in the forest, and yearly these trees were tapped, and the sap that flowed from them was gathered in great vats, and boiled in large kettles until it was a thick syrup. Many a time have I watched the burning embers through the night, and with eyes weeping from the smoke, have fallen asleep in the cabin while some one kept up the fire and the boiling of the sap. This is the most familiar kind of sugar making in the Northern States; but the boys and girls who live in the far South where the weather is much warmer than in the region of New York are acquainted with another method of sugar making, that is more complicated than the making of maple sugar, as it is also more extensively

practised. There, the plants from which the sap is obtained, are grown as a crop, much as corn is raised in the North; and instead of cutting a hole in the tree and letting the sap run out along a groove in a spile, the whole plant is cut off near the ground, and run between rollers which squeeze the juice from the stalks of the sugar cane. After this the juice is boiled down in large pans, and finally there is a thick syrup from which the sugar is formed. The sugar as it first forms is of a brown color, and needs to be further treated, or purified, before it is white or colorless, as we see it in its pure state in the loaf or granulated sugar so generally found upon the dining-room table.

Not the least interesting things connected with the sweet product of the sugar cane is the pulling of candy. It is scarcely necessary for me to describe the steps that need to be taken to have a candy pull. Of course there must be the candy, and then it needs to be pulled. A quantity of molasses is boiled in some sort of kettle or other dish, until it is thought to be "done," that is, thick enough when cold to be taken in the hand, and yet not so hard but what it can be easily pulled out into long ribbons. It requires some little skill or experience to know just when to remove the boiling candy. I recall one time when we took off the kettle too soon, and all hands had a very sticky time, even the free use of butter did not prevent the candy from getting between the fingers, and clinging close to one hand when it was desired to put it into the other. A few minutes more of boiling would have taken out the excess of water, and made the candy hard enough to be handled not only with ease but also with much pleasure. In what is the fun of pulling candy? I suppose, because it is so easy to make it take any shape. Chil-

dren like to play with wet clay or stiff mud for the same reason. I have known a child to find a good deal of fun in a piece of putty, simply because it was plastic, and could be molded easily. But candy is far better than putty or clay, because it is sweet, and most agreeable to eat. It is rare for a party of candy pullers to have as much candy at the close of the pull, as when they began. As it is pulled it keeps growing less and less by an occasional bite been taken just to see how it is getting along. Another thing that makes candy pulling attractive, is the change of color that takes place in the candy as the work progresses. It grows whiter and whiter, and this leads to a strife to see who can get the whitest roll in the shortest time. It is not always the one, who, with a little greed it may be, takes the largest quantity to pull, that wins in this race. Perhaps the most enjoyable thing connected with a candy pull is that it offers every one, young and old, an opportunity to *take a part*. No one need be left "out in the cold," as may be the case with some kinds of amusement.

Neat house-keepers are sometimes opposed to candy pulls as there is room for much soiling of furniture, clothing, etc. It is seldom that a child comes out from a candy pull as neat and clean as when he went in. He may be sweeter by far, and yet it is a sweetness that will wash off. Take it altogether I do not know of a better way to make a gathering of children remember their visit to a friend than to give them a candy pull. It is also as evident that it is an excellent method of impressing upon the one who gives it, the fact that the pull has been held in the house.

The engraving herewith presented shows a group of merry children in the midst of their candy pulling sports. UNCLE HAL.

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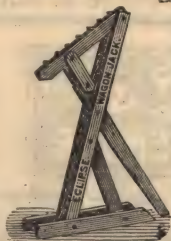
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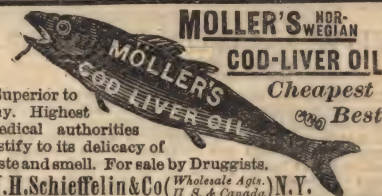
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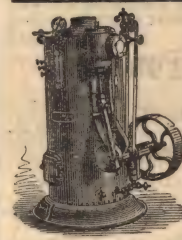
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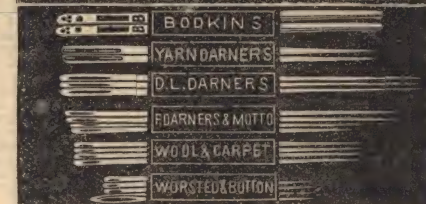
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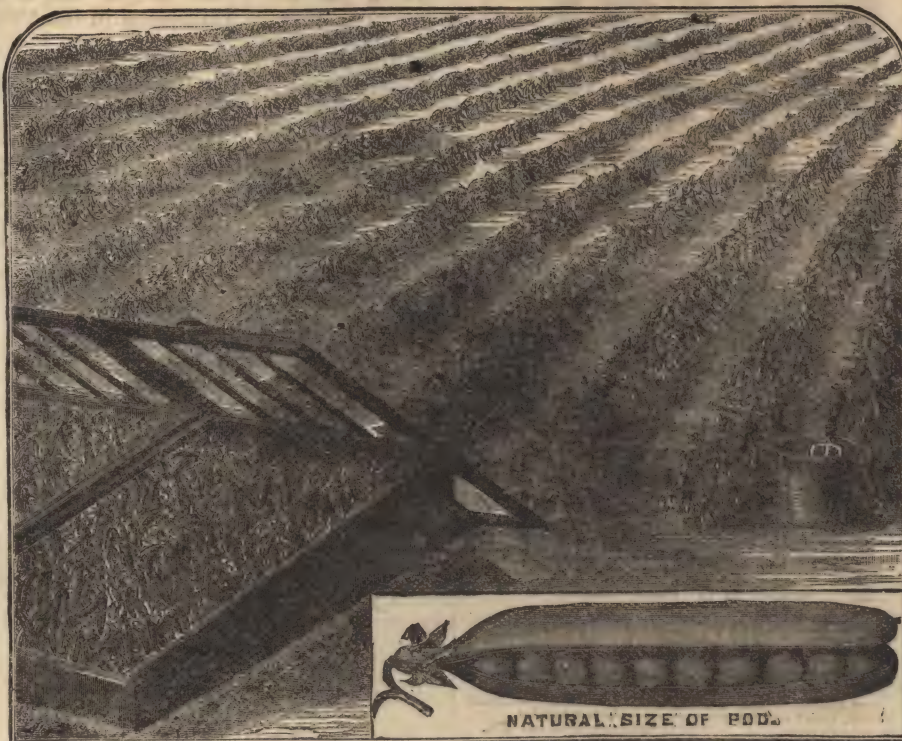
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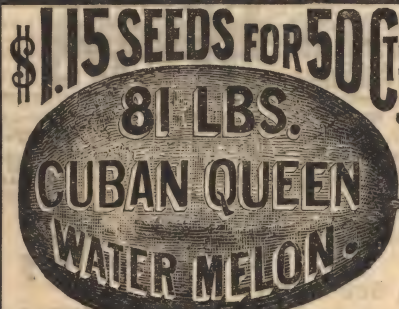
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One Hundred Too Many.—The types at the end of the long advertisement of Messrs. B. K. Bliss & Sons, last month, read 184 Barclay street. It should have been 34. One in hunting for the higher number would find himself on the pier.

Catalogues Received.

The dealers who usually issue their Catalogues during the month of February, seem to be this year later than usual. We give a list of those that have come to hand up to the time of going to press. The names are placed alphabetically, and where more than one branch of business is followed, as seedsmen and florist, the entry is made under the one which seems to be the most prominent unless circumstances warrant separate entries.

SEEDSMEN.

The large dealers offer implements of various kinds, and most of them take orders for small fruits and flowers.

R. H. ALLEN & Co., 189-191 Water street, New York.—Characteristically neat, and, as usual, very full in farm and field seeds—with novelties.

HUGO BEYER, New London, Iowa.—Neat and compact with numerous Western specialties.

B. K. BLISS & Sons, 34 Barclay St., New York.—As usual, this offers novelties in all departments, is abundantly illustrated and has a fine colored plate of new Fancies.

J. BOLDIANO & Son, Baltimore, Md.—One of the oldest seed houses in the country, keeps up with the novelties, and has several specialties of its own.

ALFRED BRIDGEMAN, No. 876 Broadway, New York.—Another old house with a copious catalogue containing many novelties and specialties. Also a special list for market gardeners.

WALDO F. BROWN, Oxford, Ohio.—An excellent selection, accompanied by sensible and practical remarks.

W. ATLEE BURPEE & Co., 219 and 221 Church St., Philadelphia.—Farm and Garden Seeds, with many specialties; also Blooded Stock and choice Poultry.

WILLIAM H. CARSON, 114 (formerly 125), Chambers St., New York.—A full list, with numerous specialties. Particular attention given to supplying Market Gardeners.

COLE & BROTHERS, Pella, Iowa.—The choicest varieties of Field, Garden, and Flower Seeds; also Horticultural Implements and Books. They offer premiums in flower seeds to those who subscribe to the *Am. Agriculturist*.

A. D. COWAN & Co., American Seed Warehouse, 114 Chambers St., New York.—A well illustrated catalogue, with many specialties in Vegetables and Flowers.

C. W. DORR, Des Moines, Iowa.—Seeds largely grown by himself. Several specialties. Also nursery stock.

D. M. FERRY & Co., Detroit, Mich.—Besides its brilliantly illuminated cover, several colored plates are given within. Several engravings illustrate the buildings and

operations of what is, in some respects, the largest seed house in the world.

L. W. GOODELL, Amherst, Mass.—Offers Seeds largely of his own growing, and gives a select list of choice varieties.

JOSEPH HARRIS, Moreton Farm, Rochester, N. Y., has of late years gone largely into seed raising. His catalogue of Field, Garden, and Flower Seeds, offers inducements to purchasers.

R. D. HAWLEY, Hartford, Conn.—Vegetables and agricultural seeds, including several novelties. Also, farm and garden implements.

PETER HENDERSON & Co., 35 Cortlandt St., New York, has on its title page, "Everything for the Garden." An examination of its contents shows it to be full of "everything" that a gardener needs, abundantly illustrated.

W. H. JOHNSON, Snowflake, Antrim, Co., Mich.—Price list of seeds and cuttings of deciduous and evergreen Forest Trees. Also "Forest Leaves," a pamphlet of brief instructions.

JOHNSON & STOKES, 1,114 Market St., Philadelphia, besides a general stock, offer several special varieties.

DAVID LANDRETH & Sons, 21-23 South 6th St., Philadelphia, give with their catalogue a "Rural Register," or Almanac, which includes a calendar of the work for each month. The seed farms of this firm are illustrated. Their reputation has long been established.

A. W. LIVINGSTON'S Sons, Columbus, O.—A full list, with various novelties. This firm produced "Livingston's Perfection" Tomato, which is glory enough for one seed house.

J. F. MENDENHALL & Co., Indianapolis, Ind.—A handsomely illustrated catalogue of Seeds of all kinds.

JOHN MYERS, Saratoga, N. Y., raises a select list of Seeds, and offers Small Fruits and Apiarian Supplies.

E. A. REEVES, No. 68 Courtlandt street, New York.—Plants and implements, besides seed, make a very large and full catalogue, lavishly illustrated.

J. B. ROOT & Co., Rockford, Ill.—This catalogue keeps up its freshness and interest, and besides seeds offers a full list of vegetable plants.

R. H. SHUMWAY, Rockford, Ill.—A list of all desirable varieties, and most abundantly illustrated.

HIRAM SIBLEY & Co., Rochester, N. Y., and Chicago, Ill.—This is one of the most elegant, as it is one of the most complete of the catalogues of the season. Its abundant contents are beautifully illustrated.

HENRY N. SMITH, South Sudbury, Mass.—A select list, with several specialties in Vegetable Seeds.

JAMES M. THORBURN & Co., No. 15 John St., New York.—This is an immense catalogue, and while illustrations of new things are introduced, the compact form of former years is still retained. Besides vegetable and flower seeds, with all the novelties, it has a fuller list of grass and tree seeds than is usually offered.

THORBURN & TITUS, 158 Chambers street, New York.—Besides seeds, with full directions for culture, bulbs, plants, and implements.

ISAAC F. TILLINGHAST, La Plume, Pa., publishes his catalogue in his quarterly "Seed Time and Harvest;" it always contains something sensible and practicable.

VANDEBILT BROS., No. 23 Fulton St., New York.—Issue a compact seed list, and another with seeds and illustrations of a vast stock of farm implements.

JAMES VICK, Rochester, N. Y., in his Floral Guide, give copious illustrations of flowers from seeds, greenhouse plants and vegetables, making it noticeable among all others.

SAUEL WILSON, Mechanicsville, Pa., has a full list, and several specialties, among them the "Japanese Nest Egg Ground."

NURSERYMEN (INCLUDING SMALL FRUITS) AND FLORISTS.

H. S. ANDERSON, Union Springs, N. Y.—A general list of small fruits, with a circular for the Duchess Grape.

CHAS. BLACK & Bro., Hightstown, N. J.—A list of fruit and ornamental trees, making a specialty of Peaches.

R. J. BLACK, Bremen, Ohio.—A full stock of fruits, with many new western varieties, especially in Apples, not generally offered.

J. G. BURROW, Fishkill, N. Y.—A Strawberry catalogue of the leading kinds, with testimonials as to the excellence of "Primo."

JOHN BURR, Leavenworth, Kansas.—The "Early Victor" Grape.

GEORGE W. CAMPBELL, Delaware, Ohio.—Small fruits, Roses, etc. The Grape list, as usual, very full, with all the recent novelties.

JOHN LEWIS CHILDS, Queens, N. Y.—In his "Guide to Lily Culture," gives a remarkably full illustrated list.

D. CONGER, Wolcott, N. Y.—Grapes and ornamental plants, with some new varieties.

THE DINGEE & CONARD Co., West Grove, Pa., have long made a specialty of Rose Culture. Their "Guide" gives full instructions, and an immense list; prices low.

FRANK FORD, Ravenna, Ohio.—Small fruits and seeds specialties. "Early Cotton" apple, Alpha tomato, seed potatoes, etc.

G. H. & J. H. HALE, South Glastonbury, Conn.—General list, with several specialties and a colored plate of the "Manchester" Strawberry.

R. S. JOHNSTON, Stockley, Del.—A general stock. Peaches a specialty.

J. T. LOVETT, Little Silver, N. J.—Small and other fruits, and several specialties and novelties, with handsomely illuminated cover. Also, a special circular devoted to the "Manchester" strawberry and the "Souhegan" blackcap raspberry.

J. N. MENIFEE, Oregon, Mo.—A select list of the best Small Fruits.

NANZ & NEUBER, Louisville, Ky.—A remarkably full catalogue of greenhouse and bedding plants, with many novelties.

S. ORTH WILSON, Raleigh, N. C.—General nursery

stock. "McCuller's winter" apple "emphatically our specialty."

E. P. ROE, Cornwall-on-Hudson, N. Y.—Full of the newest and best small fruits, and characteristically fresh and instructive.

ED. C. PHELPS, Newport, Benton Co., Oregon.—General nursery and greenhouse stock; not behind dealers on the Atlantic side in fullness and variety.

C. M. SILVA & Son, Newcastle, Cal.—A general fruit list, including many kinds peculiar to the Pacific Coast.

JABEZ WEBSTER, Centralia, Ill.—General fruit and ornamental stock.

DAVID R. WOODS, New Brighton, Pa.—A neat and full list of greenhouse and other plants, bulbs, and seeds.

IMPLEMENTS, LIVE STOCK, FERTILIZERS, ETC.

W. S. BLUNT, 94 Beekman St., N. Y.—Illustrated catalogue of various styles of "Universal Force Pumps."

WM. L. BRADBURY & Co., Nasons, Orange Co., Va.—Horses, Sheep, Swine, and other animals, at the Piedmont Stock Farm.

BOWKER FERTILIZER Co., New York and Boston.—Testimonials as to the value of the various fertilizers made by this prosperous Company.

M. CARTER, Plainfield, Ind.—Automatic Gates.

FARMER'S M'FG COMPANY, Cincinnati, Ohio.—A description of the Twin-Dasher Churn.

ALEX. KERR, Bro. & Co., Baltimore, Md.—A treatise on the use of German Potash Salt (Kainit).

EDWARD HARRISON'S ESTATE, New Haven, Conn.—Illustrated catalogue of Flouring Mills and Machinery.

TIMOTHY B. HUSSEY, North Berwick, Me.—Plows, Harrows, Cultivators, and other farm implements.

JOHN Q. MAYNARD, 95-97 Liberty St., New York.—Handsomely illustrated list of Labor-saving Specialties, including forges and various useful tools.

MORRIS, LITTLE & Son, New York.—Little's Chemical Fluid for Dipping Sheep.

FENCE & MACHINE Co., Delaware, Ohio.—Powell's Sulky Plow.

SANDWICH ENTERPRISE Co., Sandwich, Ill.—Enterprise Wind Mills, Feed Mills, Pumps, etc.

SANDWICH M'FG Co., Sandwich, Ill.—Corn Shellers for hand and power, Churns, Horse-powers, etc.

SMITH REFRIGERATOR Co., Michigan City, Ind.—An illustrated catalogue of the Alaska Refrigerator in great variety.

F. S. PERR, East Palmyra, N. Y.—Jersey Cattle and Cotswold Sheep.

UNIVERSAL COOLER Co., San Francisco, Cal.—Illustrated pamphlet, describing Artificial Coolers, Sanitary Filters, etc.

E. & O. WARD, 279 Washington St., New York.—"A Circular of Advice," Useful to all who send farm produce to market.

WHEELER, MELICK & Co., Albany, N. Y.—Steam Engines, Horse Powers, Threshers, and a long list of other farm machines.

E. WHITMAN & Sons, Baltimore, Md.—A large illustrated catalogue of a great variety of agricultural implements.

H. J. WOODEN & W. A. TRESCOTT, Fairport, N. Y., describe the Climax Evaporator and auxiliary machines.

MACHINERY, &c.

HENRY H. BABCOCK & Sons, Watertown, N. Y.—Illustrates the Watertown Windmill, with pumps, etc.

ALVIN H. FOGG, Rockland, Me.—Illustrates his "Strawberry Car."

MISCELLANEOUS.

S. L. ALLEN & Co., 127-129 Catharine street, Philadelphia.—A descriptive catalogue, illustrating the uses of the Planet Jr. Seed Drill, Wheel Hoes, etc., and their other excellent implements.

HOMER H. HEWITT, Williamsburg, Pa.—A new illustrated list of high-class poultry and Yorkshire pigs.

THOMAS HIGGIN & Co., London.—An American edition of the "Dairyman's Almanac," which, among many other matters, mentions Higgins' Salt.

E. W. ROSS & Co., Fulton, N. Y.—The progress made by Ensilage in this country is shown by the manufacture of such machines as the "Giant," also, "Little Giant" cutters as are offered by this firm.

SEDGWICK BROS., Richmond, Ind.—Wire net-work fences and gates, including automatic gates.

EUROPEAN CATALOGUES.

CUSIN & GUICHARD, Lyons, France.—Flower Bulbs and Roots.

MAX LEICHTLIN, Baden Baden, Germany.—A catalogue of one of the rarest collections in Europe.

TOMLINSON & HAYWARD, Lincoln, Eng.—A thick pamphlet with colored and other illustrations giving details as to their Clyverine Sheep Dip.

Peaches and Pears.—"E. D. R."—If your land will bear good crops of corn it is likely, so far as the soil is concerned, to be suitable for fruit. The climate and location will probably decide the question as to peaches. If the thermometer goes much below zero each winter, and there is a succession of froezings and thawings in early spring, their success is doubtful.

The Best Tomato?—"W. G. C., N. J."—We have not tested every one of the very many now offered, but we can say which is the best we have tried. Livingston's Perfection is, thus far, easily superior to all others, in beauty, solidity, regular form, and excellent quality, that it is not easy to see in what respect any other can excel it. Still we shall go on trying and reporting on new ones, as we have done for the last 30 years.

Fairs for 1882.—The first notice of a fair for this year reached us on Dec. 24th, and was from Sec. Hamm of the Neosho Valley District Fair Association; it states that the 9th annual fair of this Society will be held at its Park, Neosho Falls, Sept. 25-30, 1882. It is desired that the Secretaries of all Fair Associations will give us the earliest possible notice of the date of holding their fairs, that we may be able to answer enquiries, and also to make our fair list as full and accurate as possible.

Maggots in Apples.—"G. E. L., Merrimack Co., N. H., writes there has been trouble in that vicinity with maggots in the apples. These maggots are "an eighth of an inch in length, and about as large around as a pin; they perforate the apple in all directions." The matter was referred to Prof. A. J. Cook, who says: "The only maggot that has been described as working in apples is the *Trypeta pomonella*, but this is not the one said to injure the apples in New Hampshire. I should judge that this is a new enemy."

"Prairie Rice," Egyptian Corn, Etc.—F. J. Benitz, Fe, Argentine Republic, South America, having seen accounts of the so-called "Prairie Rice," would know more about it, its yield per acre, etc. The plant in question is a form of *Sorghum vulgare*, and has been grown in some States as a fodder crop with fair results. As a grain crop, we doubt if it is equal in any respect to Indian corn. As it is common in most warm countries, we have no doubt that it is in cultivation with you under some of its other names, such as "Durra," or "Doura," "Indian Millet," "Guinea Corn," etc. The name, "Prairie Rice," is a recent one given in one of our Western States. "Ivory Wheat" is another of the fanciful names that have been given to it, and the seeds were advertised in such a manner as to give the idea that it was a new variety of wheat. There are many varieties, and the grain varies from pure white to dark brown.

Matters in South America.—"F. J. B." writes us from Argentine Republic that he is delighted with the country. Frosts seldom occur in winter, and snows are unknown. Land sells at \$1 an acre, though in localities near cities it is from \$7 to \$10. Cattle as they run are worth \$8 per head; those fit for the butcher are \$12 and \$14. A milch cow and calf cost \$16 to \$18; and working oxen, \$25 to \$30 each. I met with a gentleman the other day who told me that he had had an increase in his cattle of 42 per cent. Linseed is now cultivated to a great extent—in fact, farmers appear to have a Linseed fever. The seed is exported in large quantities to Europe for pressing out the oil.

Boots in Wet Weather.—We have published it before, but the hint should be repeated every year. When wet boots are taken off and allowed to dry during the night, they shrink and are difficult to get on in the morning. This may be easily obviated by filling the boots, when taken off, with oats. A sufficient quantity of oats kept for the purpose, will allow the boots to dry without shrinking, and prove a great comfort.

An Uneasy Horse.—Mr. "J. R. A.," asks for a remedy for a horse "that will not stand to be unhooked."—We can suggest nothing better than to make a business of "hooking" and "unhooking" the horse with firm and kind treatment until the tendency to be uneasy is overcome.

A Manual of the Coniferae, containing a general review of the Order; a Synopsis of the Hardy Kinds Cultivated in Great Britain; their Place and Use in Horticulture. With numerous Woodcuts and Illustrations. James Veitch and Sons, Royal Exotic Nursery, King's Road, Chelsea, S. W., 1881. A work on the Coniferae, which in this country are more popularly known as "Evergreens," may be written from a botanist's or a nurseryman's standpoint. The work, the title of which we have given above in full, is essentially the work of a nurseryman. He does not trouble himself about the critical distinctions of genera,

which so puzzle the critical botanist, but taking the trees as he finds them, endeavors to show their uses to the cultivator, and to give their behavior under cultivation in England. English nurserymen long ago had their collectors on our Western Coast, and the climate of England being better suited to them, they have had vastly better success with our far western Coniferae than has attended their trial on the Atlantic slope. But it is not alone to the western American Coniferae that this work is devoted; it gives those from all countries, and, of course, includes not only those European mountain forms, but those from Japan and Northern China, which as a rule succeed better with us than do those from our Western Coast. The work, a small 4to. of 342 pages, is illustrated both by large engravings showing the port and uses of the trees in landscape, and smaller wood-cuts showing details of structure. We are surprised that the authors retain the name *Wellingtonia gigantea* for the Mammoth Tree of California, while they give *Sequoia sempervirens* for the Redwood; both are of the same genus, and botanists, both American and English, have long ago decided that they both belong to *Sequoia*. But it is not our purpose to find fault with the work, but rather to commend it to the attention of those who, on both sides of the Atlantic, will find it a useful aid in the cultivation of the Coniferae.

Strawberries for Minnesota.—F. G. Bond, Clay Co. In a climate with winters so severe as yours, it will pay to cover all strawberries; even the most hardy will be more productive. Among the newer varieties the Bidwell has proved among the hardiest. With an abundance of straw the protection is simple. When the ground begins to freeze, cover it with straw, plants and all, taking care to work it down to the soil under large plants. Near the coast, we avoid covering the tops of the plants heavily, but you will not be likely to smother them, a danger we must avoid. In spring the straw need not be removed, but go along the rows and open the covering just over the plants.

Raising Hops.—"M. C." wishes to know if we "or any of our correspondents" can give him "any idea about raising a Hop Orchard, when the plants ought to be set," etc., etc. Had M. C. written his name in full, and his address plainly, for the post mark is utterly blind, he would several weeks ago been informed of what we state now. To wit: That our pamphlet on Hop Culture, published to meet such inquiries as his, can be had at this office, post paid, for 30 cents. This gives full details by ten experienced growers in different parts of the country, and is much more extended than any one article can be; it is abundantly illustrated and is just the work that "M. C." wants. If our friends would take the trouble to give their names in full, and see that the address is plainly written, they would be answered more promptly.

Horses and Dahlias.—H. H. Logan, Suffolk Co., L. I., writes that a horse, last summer, gained access to some Dahlias, and ate a considerable quantity of their leaves and stems. The animal soon afterwards went to the barn, ate its evening ration as usual, and the next morning was found dead, though apparently in perfect health the day before. Mr. L. is inclined to regard the Dahlias as the cause of death, for the reason that on one or two former occasions the horse had taken a bite of the plant and did not seem to be well for several days afterwards. While the Dahlia is not regarded as a poisonous plant, it may have a peculiar effect upon horses, and we readily comply with our correspondents suggestions that we ask for information. If any others have observed that the Dahlia is injurious to horses, we hope that they may report.

Millet for Horses.—"M. L. B.," Neodesha, Neb., asks, if millet hay, or millet that has not been threshed, is safe to feed to horses, mules and cattle. "If there is danger, in what quantity would it be safe?"—So many different plants are now grown as millet that we are not sure which kind is

referred to. The only dangerous kind is that variously called "Bengal," "Golden," "Mammoth," and Hungarian Millet, and closely resembles Hungarian grass. The alleged danger from this is not due to the amount fed, but its state of ripeness. Each grain has just below it a few small, rough bristles. If cut while the grain is yet green, it may be used freely. If the grain is ripe, it is said that the bristles accumulate in the stomachs of the animals, forming masses which cause trouble.

Farmers' Club.—The "Volinia, Mich., Farmers Club" and some others, turn Postal Cards to good account in giving notice of their meetings. The names of the officers, the order of business, and a list of the dates of the meetings for the year, together with the subjects to be discussed, and the names of those who are to present them, are all plainly given, with room for much more upon the Postal. A properly prepared card of this kind costs very little, and serves each member as a reminder for a whole year.

The Profits of Orange Culture.—"H. A. T." sends us from De Land, Fla., notes on that locality, in which he says: "One acre of orange trees (76) budded five years ago, netted the owner \$522. Another took 6,000 oranges from one tree which at a cent and a half each brought \$90. Last year 14 trees netted the owner \$420. The largest tree I have seen is estimated to have on it 10,000 oranges; the same tree yielded last year \$125." These and many other such items indicate that orange culture, properly managed in a suitable locality, is often exceedingly profitable. The State, and orange growing have been greatly injured by high-colored statements of great profits, and at the same time implying that they were within the reach of every one. The impression has been given that the lazy, the shiftless, and all the "ne'er do wells" of everywhere else, can go to Florida and at once become rich from oranges. It is only those who bring knowledge, skill, and constant personal attention to their work, who succeed in raising oranges or cabbages. The advantages are all mentioned prominently, the drawbacks are not noticed. This very letter says: "What we most miss is the butter and milk of the north." Florida still offers most excellent inducements to the right kind of settlers—those who go there knowing that there are difficulties to be met with, and carry a determination to overcome them.

Sunflower Culture.—"C. E. B.," Huron, Dak., asks about the cultivation of sunflowers, as he has seen somewhere an article advising their culture for their seeds, and for their stems as fuel. Our correspondent evidently has in view the growing of them especially to burn, as he says that all kinds of fuel, save hay, is very scarce. So far as we are aware, Russia is the only country in which the sunflower is grown to any extent, and there the oil obtained from the seeds is the chief consideration. It is said that the crop is about fifty bushels of seeds to the acre. French writers on oil-producing crops do not advise the culture of the sunflower, because it requires a very rich soil, and the birds take a large share of the seeds; besides these, the yield is small—about fifteen per cent.—of an oil of inferior quality. We know of no demand for the seeds for pressing in this country, and if raised they must be utilized upon the farm. They are regarded as a valuable food for poultry, and have been given to horses as a stimulant and appetizer. If any of our readers have tried the sunflower as a farm crop, we shall be glad to have their experience. As to the use of the stalks for burning, we think that better fuel may be raised more cheaply. But few plants draw so heavily upon the soil for potash as the sunflower, and unless the land is rich the crop of stalks will not be large. The *Alanthus* tree would be better for fuel, and when the trees were once established they could be cut over every year; new shoots springing from the roots would give an annual crop of most excellent fuel. Peach trees grow rapidly and might be raised from the stone, if the climate will allow.

Markets—What of Future Prices?

This is not now so serious a question to many, as it often is at the present time of the year, because a smaller number than usual have grain and other products on hand to sell. As to the outlook, the situation is about thus: Beginning last summer, speculators, in view of the manifest shortage of crops, undertook to control the markets of grain and hog products. Prices were put up and kept up, beyond what Europe could or would pay, and exports have been greatly limited. Foreign dealers find more home supplies than expected; consumption has been diminished by high prices; and remote regions, not usually drawn upon, have furnished much larger supplies of Breadstuffs than were looked for.

The speculators still pretend to be hopeful of a demand at almost any price, however high, before the next harvest, while some of the largest holders hope to "unload" upon the "lamb," and so every effort is still being made to sustain the high rates as long as possible. —At this writing (February 10), and during the past two days, it has looked as if a heavy break in prices is close at hand. There has been a material decline within 48 hours. Some predict that prices will drop to last year's figures during spring. This does not seem probable; it will depend upon how far the foreign markets are already provided for. The "longs" among the speculators, who have large stocks on hand, or contracted for at the high rates, may have the financial ability to hold up the market for awhile yet, or even advance figures temporarily, but it hardly looks like it now.

Those who have already been able to get their Wheat and Corn and Hogs into market, and realize the high prices that have prevailed, may well be in a very comfortable state of mind now.

The Extent of the Fertilizer Trade.

Those who can recollect the sensation produced by a single cargo of guano, some thirty years ago, when the question was, "Who will buy it?" may be surprised to learn the vast sums now annually expended in fertilizers. The Bowker Fertilizing Company, in a pamphlet describing its own various products, gives an interesting estimate of the amount annually expended in fertilizers other than barn-yard and stable manures. It presents the following estimates: That Virginia consumes over 40,000 tons; Pennsylvania, over 50,000 tons; New Jersey, over 20,000 tons; New York, over 35,000 tons; Ohio, over 15,000 tons; New England, over 50,000 tons. And the use of fertilizers is rapidly increasing towards the Mississippi Valley, and through Michigan, Indiana, and Kentucky. The consumption in the Atlantic and Middle States is estimated at not less than 500,000 tons, or about \$20,000,000 worth.

Three Thousand Dollars, ready money, is a comfortable sum to have on hand by a widow and orphans if the head of a family be removed by death. The Mutual Life Insurance Company's report in another column shows that on January 1 it had in force 101,490 policies, averaging about \$2,103 each, with a surplus of twelve million dollars over the necessary amount to make all these policies good, according to the New York State standard. The reduced rates of insurance adopted by this Company have not prevented an increase in its surplus of over a million dollars during the year.

Scaly Legs in Fowls.—"E. E. S.," Union, N. Y. The enlarged scales are usually due to the presence of a small insect which lives and breeds under the scale. It may be cured by the use of the Flowers of Sulphur mixed with lard, or by the application of lard in which a small quantity of kerosene has been mixed. No proportions are given. One writer advises the use of the sulphur ointment for a few days; then to wash the legs with soap and water, and afterwards rub them with a flannel moistened with kerosene.

The Madison Co. (Miss.) Farmers' Club.

—A very sensible and wide awake club is that of Madison Co., Miss. While it is desirous that the State should establish Experiment Stations, it does not wait for this, but makes experiments itself. A special committee was appointed, and this committee went to work in a most practical manner. Properly regarding corn as the most important crop, the question that the committee propounded was, we infer, "What do our exhausted lands need in order that they may raise good crops of corn?" The committee went, of course, to some expense, but not for any kinds of "imeters" or "ometers." They were extravagant only in the way of tubs, and these were made from flour barrels, forgetful that in the days of witchcraft, one who made two tubs from a barrel was hung as a witch. The tubs were two-thirds filled with soil, "the most exhausted" red clay to be found. Corn was planted in each tub, and the soil in each was fertilized with Potash, Phosphoric Acid and Nitrogen, sepa-

ately and in combination. We have an interesting Bulletin sent out by the Club, showing the details of the experiments and the results. The great want of the soil experimented with is shown to be Nitrogen, and it appears that this is best supplied by manuring with Cotton-seed. But our object is not so much to give the results of the experiments, as to point out the eminently practical action of the Madison (Miss.) County Farmers' Club. If it can not have an Experiment Station, yet awhile, it invests in tubs and experiments itself. We commend its action to other Clubs not only in Mississippi, but in other States. One fact like this, thus established, raises the value of every acre of land in the State.

The Statement telegraphed all over the country a few days ago that Beatty's Piano and Organ establishment at Washington, N. J., had been destroyed by fire a second time, proves to have been a malicious falsehood. Had such a calamity occurred to so great an enterprise, it would have occasioned universal regret and sympathy from the public. We are glad to hear that the Factory is in perfect repair and full operation, and turning out more instruments than ever.

Cracks in Stoves.—The "English Mechanic" says, mix equal parts of finely sifted wood ashes and clay, and "a little salt." (How much this is the writer does not state). Make into a paste with water, and fill the cracks while the stove is cold. It becomes very hard when heated, and does not crack or scale off.



FEARLESS.
The only machine that received an award on both Horse-power and Thresher and Cleaner, at the Centennial Exhibition; was awarded the two last Cold Medals given by the New York State Agricultural Society on Horse-powers and Threshers; and is the only Thresher selected from the vast number built in the United States, for illustration and description in "Appleton's Encyclopedia of Applied Mechanics," recently published, thus adopting it as the standard machine of the country. Catalogue sent free. Address
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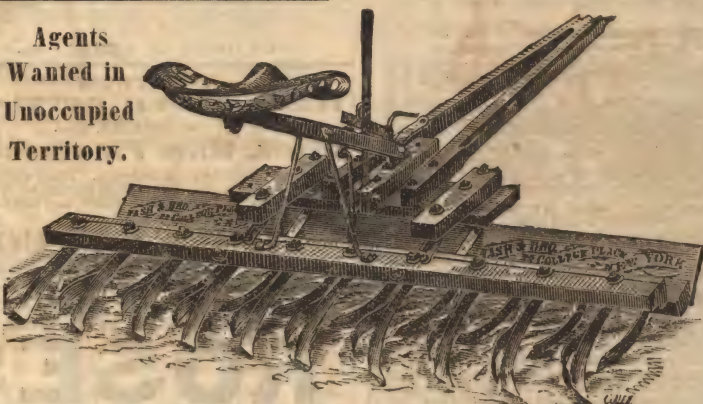
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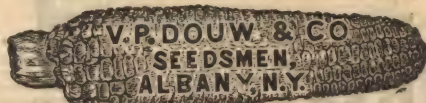
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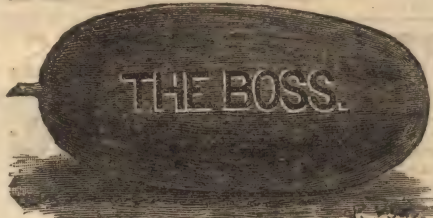
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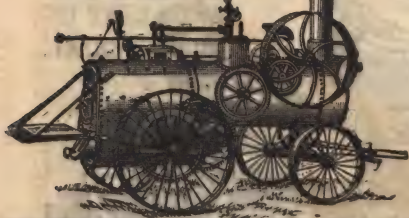
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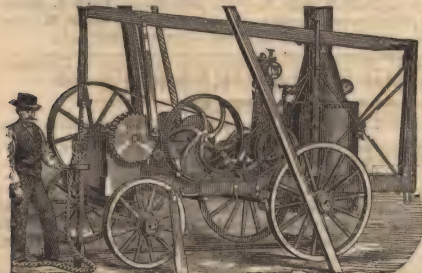
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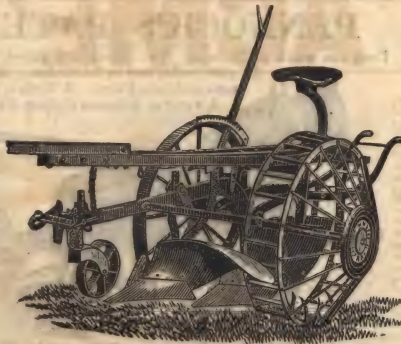
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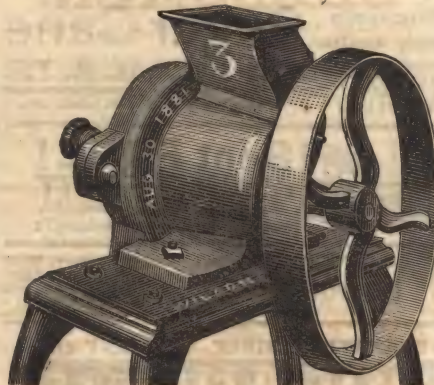
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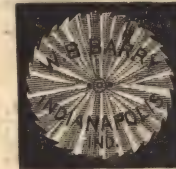
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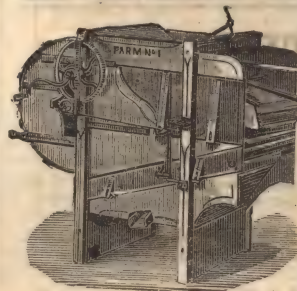
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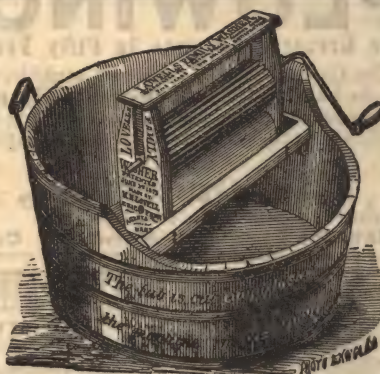
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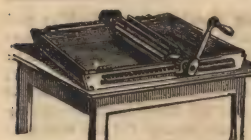
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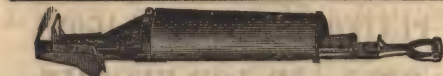


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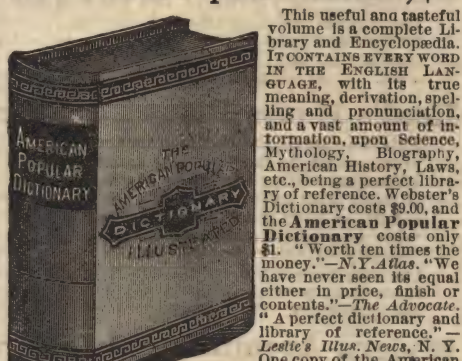
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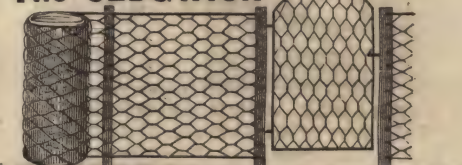


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| 11 A Model Love Letter,—come! | 131 I've no Mother Now, I'm Weeping | 242 Ben Bolt. |
| 12 Wife's Commandments.—come! | 132 Massa's in de Cold, Cold Ground. | 243 Good-Bye Sweetheart. |
| 13 Husband's Commandments. | 133 Say a Kind Word When You Can. | 244 Sadie Hay. |
| 14 Little Old Log Cabin in the Lane. | 134 I Cannot Sing the Old Songs. | 245 Tina Flanagan's Wake. |
| 15 Marching Through Georgia. | 135 Norah O'Neal. | 246 The Hat My Father Wore. |
| 16 Widow in the Cottage by the Sea. | 136 Waiting, My Darling, for Thee. | 247 I've Only Been Down to the Club. |
| 17 The Minstrel Boy. | 137 The Flower of Kildare. | 248 Kiss Me Again. |
| 18 The Faded Coat of Bino. [Night] | 138 I'm Lonely Since My Mother Died | 249 The Vacant Chair. |
| 19 My Old Kentucky Home, Good | 139 Tending on the Old Camp Ground. | 250 The Sweet Sunny South. |
| 20 I'll be all Smiles to Night Love. | 140 Don't You Go, Tommy, Don't Go. | 251 Come Home Father. |
| 21 Listen to the Mocking Bird. | 141 Willie, We have Missed You. | 252 Little Maggie May. |
| 22 Her Bright Smile Haunts Me Still. | 142 Over the Hills to the Poor House. | 253 Molly Bawn. |
| 23 Sunday Night When the Parlor's | 143 Over the Hills to the Poor House. | 254 Sally in Our Alley. |
| 24 The Gypsy's Warning. [Full] | 144 Why did She Leave Him? [other] | 255 Poor Old Ned. |
| 25 'Tis But a Little Faded Flower. | 145 Thou Hast Learned to Love An- | 256 Man in the Moon is Looking. |
| 26 The Girl I Left Behind Me. | 146 There's None Like a Mother. | 257 Broken Down. |
| 27 Little Buttercup. | 147 You Were False, but I'll Forgive. | 258 My Little One's Waiting for Me. |
| 28 Carry Me Back to Old Virginia. | 148 Whisper Softly, Mother's Dying. | 259 I'll Go Back to my Old Love Again |
| 29 The Old Man's Drunk Again. | 149 Will You Love Me, When I'm Old. | 260 The Butcher Boy. |
| 30 I Am Waiting, Bessie Dear. | 150 Annie Laurie. | 261 I've Gwine Back to Dixie. |
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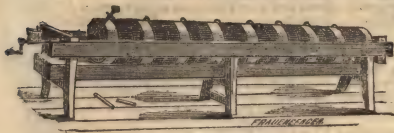
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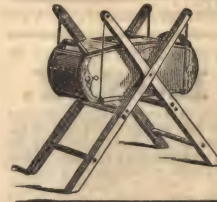
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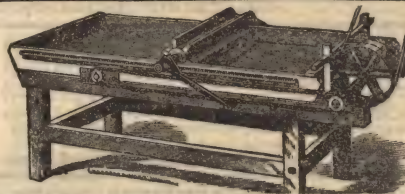
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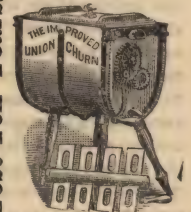
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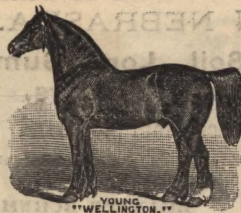
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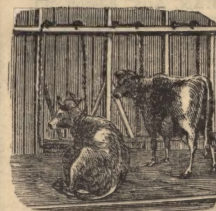
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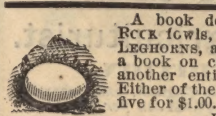
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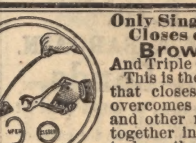
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The State of Michigan has a good climate, a fertile soil, four thousand miles of railway and sixteen hundred miles of lake transportation, convenient markets, a settled society, established institutions, great and diversified industries, a liberal free school system, low taxes and practically no debt. It has also several millions of acres of unoccupied lands, suitable for almost every variety of husbandry, many of them subject to free settlement under United States or State Homestead laws, and all of them for sale at prices within the reach of men of small means.

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Works with any Plow. Remodelled and improved for 1882. Send for Illustrated Circulars.
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American Agriculturist

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MOWERS AND HAY RAKES
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SERIES CHILLED PLOWS.**
BOTH RIGHT AND LEFT HAND.
MANUFACTURED ONLY BY

THE WIARD PLOW CO.,
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ALL the Latest and Most Valuable IMPROVEMENTS.
THE BEST for general purposes in sod and stubble
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THE BEST adjustment for 2 or 3 horses abreast
POSITIVELY THE LIGHTEST IN DRAFT!
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OUR JOINTERS, WHEELS and HANDLES
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OUR MOLDBOARDS excel all others for fineness
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OUR PLOWS are warranted to any reasonable ex-
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If you are going to buy a new Plow, be sure to give the
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HIGHEST AWARD



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Cheapest and best for all pur-
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MILLS, GINS, PRESSES
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Lightest draft,
most durable,
simplest, most

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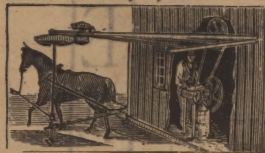
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Simplest, cheapest,
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WITH OR WITHOUT

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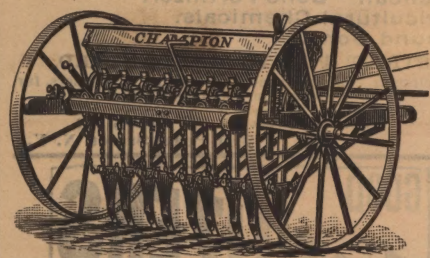
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The only Grain Drill having a Special
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No Grain Drill in the market can perform so great a variety of
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Champion Cord Binder.

MANUFACTURED BY

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THE BEST CULTIVATOR MADE.



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with it, than with the ordinary Cultivator. Can do
the work much better and easier than with any
other.

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any other of the many Spring Cultivators, which
the success of this Cultivator have brought out in
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Send for Diary, FREE.

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Level Tread Horse Power

WITH SPEED REGULATOR.



**Heebner's Improved Little Giant Thresh-
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Ref., Irving National Bank, New York City.

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THREE MACHINES IN ONE,
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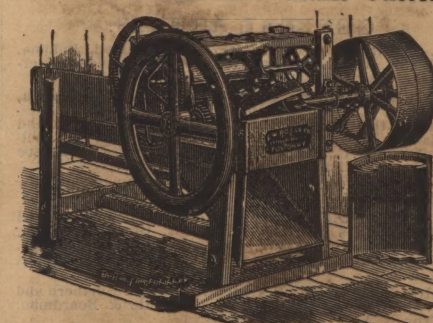
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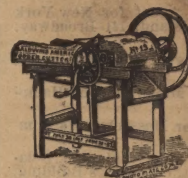
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Send for circular containing full
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MADISON MACHINE CO.,
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F. S. WINSTON, President.
For the Year ending December 31st, 1881.

Income during Year 1881.

From Premiums.....	\$12,496,624 62
" Interest and Rents.....	5,051,491 74
Total Income.....	\$17,548,116 36

Disbursements during Year 1881.

For Death-claims.....	\$4,460,205 91
" Matured Endowments.....	1,905,167 53
" Annuities.....	24,094 80
" Dividends.....	2,917,355 85
" Surrendered Policies.....	3,803,247 98
" Commissions.....	774,082 88
" Contingent Guarantee Account.....	304,564 35
" Taxes and Assessments.....	346,709 27
" Expenses.....	792,525 07
Total Disbursements.....	\$14,757,943 69
Total Claims paid during the year.....	\$6,365,373 49
Total paid Policy-holders during the year.....	\$2,640,112 12

Assets, January 1st, 1882.

Mortgages on Real Estate.....	\$4,460,205 91
United States and other Bonds.....	11,222,080 00
Loans on Collaterals.....	15,615,000 00
Real Estate.....	1,332,749 01
Cash in Banks.....	1,792,015 73
Interest Accrued.....	1,234,017 64
Deferred Premium.....	583,958 55
Premiums in Transit.....	88,837 76
Total Assets.....	\$34,409,937 92

Liabilities, January 1st, 1882.

Reserve at four per cent.....	\$3,871,651 00
Death-claims not yet due.....	815,785 36
Premiums paid in advance.....	11,222,080 00
Agents' Balances.....	535,733 74
Surplus and Contingent Guarantee Fund.....	4,192,383 04
Total Liabilities.....	\$34,409,937 92

Surplus, January 1st, 1882.

By Company's standard.....	\$4,492,383 04
" Massachusetts State standard.....	6,624,968 04
" New York State standard.....	12,206,450 04

Insurance in force January 1st, 1882,
101,490 Policies, insuring \$315,900,137.

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FERTILIZERS
BEST
GOODS
NOT QUALITY
PURITY
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LOWEST PRICES

POWELL'S PREPARED CHEMICALS

For \$12 a Farmer can buy a FORMULA (520 lbs) of POWELL'S PREPARED CHEMICALS

This, when mixed at home, makes One Ton of SUPERIOR PHOSPHATE, equal in plant-life and as certain of successful crop-production as many high priced Phosphates.

NO EXTRA EXPENSE. (No trouble to mix. Full directions.)

POWELL'S CHEMICALS have been thoroughly tried, give universal satisfaction, and we offer leading farmers in every State as reference. Send for Pamphlet. Beware of imitations.

Brown Chemical Co

SOLE PROPRIETORS,

Manufacturers of, BALTIMORE, MD.

Powell's Tip Top Bone Fertilizer. Price only \$35 a Ton, net cash. Bone Meal. Dissolved Bone. Potash. Ammonia. And all high-grade Fertilizing Materials.

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An Age in Advance of All Other Inventions.
From a single spool makes a seam stronger and more beautiful than by any combination of two threads.

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AUTOMATIC**

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WILLCOX & GIBBS S. M. CO., 658 BROADWAY, N. Y.

HOME Insurance Co.

OF NEW YORK.

Office: - - No. 119 Broadway.

Fifty-seventh Semi-Annual Statement,
Showing the condition of the Company on the First day of
JANUARY, 1882.

CASH CAPITAL.....	\$3,000,000 00
Reserve for Unearned Premiums.....	1,943,733 00
Reserve for Unpaid Losses.....	245,595 36
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